

Arja Piirainen & Irma Sarekoski (eds.)

CLIENT-DRIVEN CARINGTV® CONCEPT FOR ELDERLY FAMILY CARE GIVERS LIVING AT HOME

Final report of the Coping at Home research



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Customer-driven CaringTV®
concept for elderly family care givers living at home
Final report of the Coping at Home research

Arja Piirainen & Irma Sarekoski (Eds.)

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Foreword

The starting point for the Coping at Home research and development project was to investigate and develop processes related to promoting and maintaining elderly people's well-being. The project is a good example of the integration of the three tasks of a university of applied sciences: education, research and development, and regional development. The principle of integrating the three tasks was included in Laurea's strategy in the early twenty-first century, after which it was recorded in Laurea's first Pedagogical Strategy in 2002.

In 2000, the Board of Directors of Laurea-ammattikorkeakoulu Oy defined Laurea's strategic intent as becoming a recognised expert in network processes by 2005. The Coping at Home project required good network process management for reconciling the diverse expectations of family care givers, customers, the City of Espoo, participating companies, higher education partners and the Finnwell programme run by Tekes (the Finnish Funding Agency for Technology and Innovation). Laurea's strategic intent for 2010 is more demanding, with the aim of becoming a fully authorised and international university of applied sciences focused on innovation. The CaringTV innovation created in the research project is a response to the need for developing elderly services and welfare. As an element of the initiative of the City of Espoo to develop pioneering elderly services, this project consists of regional development at its best. According to users, businesses, the City of Espoo and international bodies, CaringTV is an important innovation that makes it possible to increase the quality of elderly services in the future, while keeping funding needs at a realistic level.

Students from Laurea Otaniemi participated in the Coping at Home project in accordance with Laurea's Learning by Developing (LbD) model. By participating in planning and implementing the programme production for CaringTV using research analysis, students became familiar with typical illnesses of the elderly, how to prevent and to treat them, as well as with planning, carrying out and evaluating therapy for elderly patients. Experience showed that applied research-based learning increased not only the students' competence in elderly care, but also their interest in working with the elderly. This means that the availability of competent staff for geriatric care can be improved by developing learning models.

Major partners in the project were TDC-Song Oy, Videra Oy, FysioSporttis Oy, Helsingin Lääkärikeskus-Yhtymä Oy, HUR Labs Oy, Mawell Oy, Medixine Oy and Vivago Oy, which contributed some of the technology and essential elderly services for the project. In return for their participation, the companies received new product ideas and increased business. This signifies the fulfilment of the Triple Helix model described in Laurea's strategy – i.e. overlapping cooperation between higher education, businesses and the public sector. The Well Life Center facilitated this cooperation by offering a physical space in which the various parties could meet and exchange ideas, formally or informally. FysioSporttis Oy was chosen as Enterprise of the Year in 2007 by the Federation of Finnish Enterprises, being the first service provider to receive the award in years. This demonstrates the calibre of business expertise involved in the project.

Laurea's duty was to develop the overall concept of CaringTV, produce content, conduct action-based research and development, as well as train professional staff to fulfil new service roles in the future. Research partnerships between higher education institutions arose in the form of the participation of health science students from the University of Jyväskylä in research on the physical strain of family care givers, and through international cooperation with Tohoku Fukushi University in Sendai, Japan. Shared international seminars were used to develop solutions to support living at home and activity among the elderly, suitable for use in both cultures.

As the Chairman of the project's steering group, I would like to thank all of the project partners and implementers: the City of Espoo; the members of Espoo's EEVA elderly services development project team; participating family care givers and students; management and lecturers of Laurea Otaniemi; the Faculty of Sport and Health Sciences of the University of Jyväskylä; participating businesses; Project Manager *Irma Sarekoski* (Master of Health Sciences), co-author of the final report; and Principal Lecturer *Arja Piirainen*, PhD, co-author of the final report and head coordinator of the project research elements.

Tekes's Finnwell programme played a crucial part in funding the project, and Tekes's representative, the technology expert Risto Veijola, deserves praise for assisting the rest of the project management team in many issues, such as utilising innovations. Therefore I would like to thank Tekes for its financial and expertise-related contributions.

Coping at Home is one of Laurea's most important research and development projects, if not the most important, in the twenty-first century. It provides an ex-

cellent example of the status and opportunities of applied research and development at the university of applied sciences.

Vantaa, February 10, 2008

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1 Introduction

Caring for the elderly is a global challenge. The number of elderly people has grown the fastest in Finland, Italy and Japan. In Finland, the challenges arising from the aging of the population are related particularly to living conditions, local services, social services and health care. The population of Espoo is the healthiest in Finland, and the city's socioeconomic level is above the national average. This trend is expected to become even more marked. This means that Espoo's policy for elderly care and the related development of services can be built on the population's own resources. In 2002, there were 18,872 people aged over 65 in Espoo. The number is expected to grow strongly in coming decades and reach an estimated 26,137 in 2010, just fewer than 13% of which have Swedish as their mother tongue (*Espoon kaupungin vanhuspoliittinen ohjelma 2002*, pp. 1–2).

Over-75s form a particularly interesting age group in terms of service planning, as the need for services has been shown by many studies to increase after the age of 75–80 (Heikkinen & Rantanen 2003). In the next eight years, the number of people aged 75 and over will grow by 33% (2,485 people) in Espoo (*Espoon kaupungin vanhuspoliittinen ohjelma 2002*, pp. 1–2). Support for home care was developed in Finland in the 1970s to facilitate in-home care of the elderly and disabled, in order to make it easier for them to live at home. Elderly services were set by law (Social Welfare Act 710/1982) to be the duty of municipal councils. Since then, the emphasis has been on services that support coping at home. Care provided in the home by family members began attracting attention in the 1990s (Saarenheimo 2003, pp. 16–18). Home care support was changed into support for caring for family members in a decree on care (318/1993). Publicly funded family care has become a generally accepted elderly care support service. These days, a municipal allowance for family care giving can be applied for by any person who provides in-home care for an ill or disabled child, adult or elderly person who requires care and treatment to cope with everyday life (Saarenheimo 2003, pp. 10–12). Many elderly people prefer to stay at home as long as it is safe, and their relatives are often willing to care for them (Pietilä

2005, pp. 20–21). A survey conducted on the relatives of elderly people in Espoo in 2006 indicated that three quarters (74%) felt that home was the best place for their elderly relatives to live (Vaarama et al. 2006, p. 6).

Finland's National Information Society Strategy for 2007–2015 considers responding to major national and global change trends to be critical to the continuity of positive development. Such trends include the growing role of the service sector, the high rate of retirement, increased demand for social services and health care, as well as ensuring the availability, quality and funding of public services. The strategy considers the retirement trend to allow for the implementation of essential structural reforms. Effective use of technology and reforms in the way new services are produced can increase efficiency and free personnel for interpersonal, interactive work. According to the Information Society Strategy, this will help Finland develop export-worthy services and service concepts (National Information Society Strategy 2007–2015, pp. 16–17).

This research report consists of seven chapters, where Chapters 2–5 and 7 were written by the authors of the report. Chapter 6 contains evaluations of the CaringTV concept produced in the project, in relation to changes in service culture, social participation and collaborative pedagogy. The chapter consists of articles by several authors, evaluating the effectiveness of the concept using various research data. The authors are: Päivi Lehtinen, student of Master's degree in Social Services; Katri Lagerblom, Jaakko Valvanne and Johanna Leskelä of the City of Espoo's elderly services; Päivi Immonen-Orpana, Senior Lecturer at WLC; Katariina Raji, degree programme director at Laurea Otaniemi; and representatives from participating businesses.

2 Aiming for human well-being

The aim of the National Information Society Strategy for 2007–2015 is to “invest in everyday innovations and in contents and services that make everyday life easier for people and organisations.” In the Coping at Home project, which is included in a larger initiative run by the Finnish Funding Agency for Technology and Innovation (Tekes), the purpose of the welfare technology created is defined as supporting the everyday life of family caregivers using technological innovations in order to facilitate and support the provision of family care givers. The research aims to change the previously established view of elderly people as feeble or frail. The research sees elderly people as empowered members of society who look after their own lives, make their own decisions, and use welfare services when necessary.

Humans are seen as both being involved in the world and making decisions on their own lives (Rauhala 1986, pp. 25–38). They have their own knowledge, skills and abilities, values, beliefs and experiences related to their bodies and their own condition (Rauhala 1986, pp. 42–50). Humans are also a part of their environment, which is recognised as a physical, social and symbolic element (Kim 1983). The physical environment can be a chosen place of work or leisure, or the home, which is in a house, apartment block, terraced house or any other kind of built structure considered to be home. The symbolic environment is ever-present, consisting of objects (e.g. pictures, dishes, furniture), equipment (washing machine, fridge, hairdryer, TV, stereo), household, mobility, hygiene or dressing devices, a view from a window, and any such elements that are an essential part of a person’s life. The social environment consists of the people and animals that are physically or emotionally close to the person or the person’s neighbours. It includes people who provide the person with care, attention and treatment. These can include the person’s children or relatives, health care or maintenance staff, or peers from clubs, societies or study groups, etc.

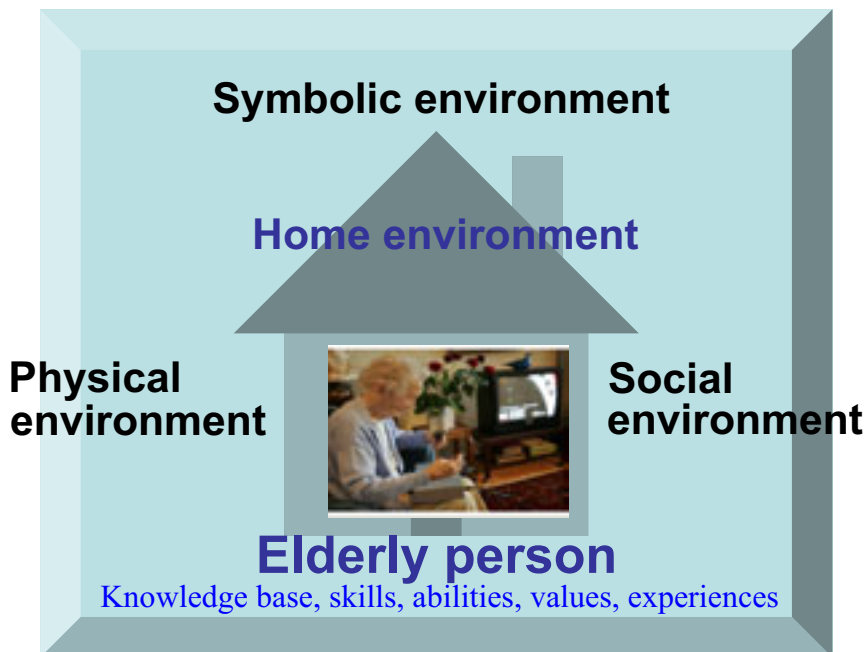


Figure 1. The elderly person's home environment

Even at an advanced age, people are active participants in the changes in their lives. Every day throughout their lives, they act, enjoy, rejoice, change, develop and grow. Brown & Brown (2003) have proposed the practical “being, belonging and becoming” model for quality of life, which is similar to the model of a good life for elderly people developed for this research on the basis of Rauhala’s concept of humanity (cf. Figure 1).

2.1 Studying the quality of life of elderly people

The abovementioned principles of a good life were the foundations of the Coping at Home project. From the perspective of these principles, the main question is how quality of life can be promoted together with the elderly person. Previous studies have approached quality of life on the basis of empirical models (psychological, sociological, medical) or issues related to life management identity (e.g. physical, material, social, emotional or productive well-being). The topic has also been studied from the points of view of identity theory, praxism and individual life-worlds. Pieper et al. (2008, p. 68) consider the abovementioned approaches to be problematic in that they do not provide a clear schema for assessing the

topic as a whole, and they do not explain the importance weighting of each element.

Pitkälä et al. (2006) also consider definitions of quality of life to be deficient, with indicators focusing on the negative consequences of illness and reduced activity. They do not bring out the positive aspects of well-being, such as the elderly person's environment, social network or welfare production. A feeling of being needed, empowerment, active participation and a sense of control produce psychological well-being and health. Self-perceived psychological well-being is crucial to the prospects of elderly people in terms of mortality, institutionalisation and possible dementia. Certain life situations and groups could be theoretically defined using a structured system-theoretical model (Veenhoven 2000) or with a specific model for dementia patients (Lawton 1991).

However, the quality of life of family care givers living at home is different from that of those who are institutionalised (Pieper et al. 2008, pp. 69–70). For people who have the ability to leave home, marginalisation, mobility and loneliness are major factors in quality of life (Lawton 1997), as is the elderly person's relationship with different environments (Veenhoven 1996; Bennet et al. 2006). Caring forms a part of the daily lives of family care givers, so their own perceptions of care are a major element of their quality of life (Pieper et al. 2008, p. 72). Conscious subjective well-being (satisfaction) is an essential indicator of quality of life, but it does not define it as a whole (Maud et al. 2007; Andren et al. 2005). According to Pieper et al. (2008, p. 73), investigations of quality of life require a holistic, customer-oriented approach, in which family care givers strive to maintain the customer's autonomy and capability (e.g. rehabilitation, support of self-help) and act as social partners, producing psychological well-being. This research took into account the outcomes of previous research, using existing indicators of quality of life and talking to elderly subjects about their perceptions of their own situation, which fulfils the aims of the holistic and customer-oriented approach (cf. Figure 1).

2.2 Collaboration in the Coping at Home project

The life experience of elderly people is evident in their ability to modify their environment to suit their needs, and to find ways of compensating for reduced functional ability. Today's elderly generations have lived through massive technological changes and learnt to use a lot of new technology in their time. From the point of view of technological development, there is no getting away from the fact that social and technical knowledge are tightly woven together. Developing

technological solutions that support well-being is a great challenge in Finland (Heikkinen & Rantanen 2003, pp. 421–2), just as it has been found to be in Japan. One of the partners in the research project was Tohoku Fukushi University in Sendai. Shared meetings were arranged to discuss the challenges of aging and to develop solutions that could support living at home and activity among the elderly in both cultures. Meetings held with Tohoku Fukushi University in March and September 2006 concerned defining shared concepts (Pirainen & Raji 2006), while the theme for 2007 was to develop a new rehabilitation philosophy that promotes quality of life (Raji, Pirainen & Lehto 2008).

The main point of the Coping at Home project was to investigate and develop processes related to promoting and maintaining well-being among elderly people. The aim of the project was to examine, model and develop welfare network models and technological products suitable for elderly people, which promote and support living at home. The Coping at Home project focused on subjects living in the City of Espoo. It was intended to produce research data for welfare organisations to use regionally, nationally and internationally in relation to facilitating living at home and delaying institutionalisation. The project produced new indicators for functional ability, innovative service products and new operating models.

Aims of the research project:

1. To facilitate living at home for elderly customers, identifying and modelling support processes for living at home and finding their weak links.
2. To examine and develop new technologies whose implementation does not require a home visit from an expert, using tools that are suitable for evaluating coping at home among elderly people.
3. To examine and develop quality assessment tools that can be used in evaluating outsourced services with creative benchmarking.
4. To create a bidirectional connection between elderly people and service providers using a two-way TV set, in cooperation with TDC-Song and the City of Espoo.
5. To adopt innovations in technology-utilising services (LabLife and HabitatLab) and to pilot their use in simulated conditions (LabLife, ActivityLab and HabitatLab).
6. To share knowledge of applicable models, indicators and practices regionally, nationally and internationally, through education, scientific publica-

tions and conference papers. An international partner in the research project is Tohoku Fukushi University in Sendai.

Working to fulfil the aims of the Coping at Home project was a project management team formed by the following representatives of participating partner organisations:

Laurea University Of Applied Sciences:

Pentti Rauhala, President, Chairman I-II

Helena Erjanti, Vice President I-II

Katariina Rajj, Director I-II

Arja Piirainen, Principal Lecturer II

Irma Sarekoski, Project Manager, Secretary I-II

University of Jyväskylä

Esko Mälkiä, Professor I-II

City of Espoo Social Service and Health Department

Jaakko Valvanne, Director, Elderly Services I-II

City of Vantaa

Ossi Savolainen, Deputy Mayor I

Finnish Funding Agency for Technology and Innovation (Tekes)

Risto Veijola, Technology Expert I-II

FysioSporttis Oy

Petra Kaukoranta, Physiotherapist I

Managing Director II

Helsingin Lääkärikeskus-Yhtymä Oy

Sampo Härkönen, Chief Administrative Physician II

Hur Oy

Jussi Jaakkola, Marketing Director I

HurLabs Oy

Anssi Lipsonen, Managing Director II

Mawell Oy

Kimmo Alaniska, Director, Consulting Services I

Medixine Oy

Tapio Jokinen, Chief Executive Officer I-II

TDC-Song

Teemu Huttunen, Business Manager II

Videra Oy

Harri Martinmäki, Managing Director II

Laurea's research and development task is a challenge to diverse welfare service operators and the businesses and participants in Laurea Otaniemi's Well Life Center to produce innovative service products and measures through shared research, development and application. A joint interest in investigating and developing activities and in achieving effects and changes in the welfare sector facilitates encounters and cooperation between the public and private sectors. Technology, particularly gerontechnology, has allowed for the development of communication devices that are easy to use and take into account the special characteristics of the elderly, such as presbyopia, little practice in using computers or inaccurate and slow movements. This research includes the development of CaringTV, meant specifically for use by the elderly, as a collaboration between Laurea, TDC-Song and the City of Espoo.

Laurea's research project brought together the expertise of the lecturers and students at the university of applied sciences and the university, the employees of the City of Espoo, family care givers in Espoo, TDC-Song and the technology experts from other participating companies in order to create the CaringTV innovation, whose functionality was then evaluated by 25 family care givers in Espoo selected as customers.

The Well Life Center contains welfare experts, lecturers, higher education students in welfare competence (physiotherapy, nursing, social work and public health nursing), and future employees. The three-task integration model, Learning by Developing, created at Laurea (cf. e.g. Raji 2007) has allowed students to develop competence in using gerontechnology. The City of Espoo has developed preventive services for the elderly in its EEVA project, in accordance with its policy for elderly services. The aim of the EEVA project is to promote the health, well-being, independence and safety of elderly people in their own living

environments. The EEVA project team was involved in producing the services of the City of Espoo for the Coping at Home project. TDC-Song developed some of the technology for CaringTV, which was installed by the City of Espoo in the homes of the 25 participating family care givers, mostly in the spring of 2006. The aim of the Coping at Home project was to create a two-way connection between elderly family care givers in Espoo and health care and social service providers. The technical solution is to be implemented as part of Espoo's new IT and telecom network.

3 CaringTV[®]: conceptualisation

The new technology is expected to provide a solution to problems related to availability of services at home. It comprises the invention and production of tools, as well as their use and application. Synonyms of welfare technology in this research include health care technology, gerontechnology and technical aids. Welfare technology can be separated into low and high technology, with low-tech referring to traditional tools and high-tech to more technologically advanced devices (Löfquist et al. 2005). Gerontechnology comes under welfare technology. The portmanteau word consists of two words: gerontology (the scientific research of aging) and technology (the investigation and development of engineering and products). Gerontechnology is based on the idea that the elderly want to function independently and participate in the developing society (Kaakinen & Törmä 1993). Its vision is to empower the elderly until they are members of society who use their civil rights, participate socially and share their life experience with society. Gerontechnology emphasises user-orientation, striving to make technological solutions as user-friendly as possible (Design for All), as well as product development that involves the elderly customer (Kuusi 2001).

3.1 Welfare technology for the aged

Welfare technology is expected to provide some solutions to the challenge of the aging population, and to save resources in social services and health care. It is hoped that technological solutions will be found to support living at home. Before technological solutions are adopted, their social, ethical, economic and societal effects must be assessed (Eerola et al. 2001). Technology will cover some of the needs of elderly care, treatment and communication (Hiltunen 2000, p. 43). The aim is to produce innovations that facilitate independence and self-care, and allow elderly people to remain in home care longer than before, despite their weakening health. It is justified to assume that as care needs increase with the aging of large population groups, information technology and other high technology can be used to replace some of the work carried out by humans. The goal is to produce and develop technological devices with which people can care for

themselves without the continuous presence of a professional (Miettinen 2000, pp. 35–36). A focal point of the future will be invisible technology that can be used to monitor people's health and activities ("monitoring without awareness"). Another challenge lies in intelligent systems that predict the next stage in the user's actions (Winblad 2007). Technological development alone is not enough, however; changes in service systems and structural reforms are also needed (Löfquist et al. 2005).

Technology will be used to support human activity in implementing and developing care. ICT is expected to offer alternatives to traditional care methods and services. Interactive programmes will be used in health promotion, and home care can be supported using remote monitoring devices and video conferencing. The focus in these procedures should be on ethics: care staff must observe and respect the customers' autonomy when selecting care methods and services. In the information society, customer orientation and independence rely upon customers' IT skills. User-friendly technology and diverse individual and organisational factors will allow for the use of ICT in care by 2010 (Jauhiainen 2004). Until now the problem has been a lack of participation from aging users in planning technology, and the fact that human interaction has not been taken into account in digitising services. Elderly customers want opportunities for personal service to remain in place, alongside digital services (Mäensivu 2002, Sankari 2004).

According to the Technology Programme Report (Tekes 2005), the health and welfare sector faces major challenges and changes. The I-Well programme predicts new demand for welfare technology products that support people's health care, well-being and independent coping. Also predictable are significant changes in the economy and in health care funding caused by the aging of the population, which makes it reasonable to delay the need for institutional care as long as possible. This requires measures for maintaining and promoting the population's well-being and health, and for producing suitable new kinds of services and supporting technologies. The application of new technology to support independent coping requires technical testing. Support for such tests should be provided and information on their outcomes should be made widely available so that they may assist as many elderly people as possible in living independently.

3.2 CaringTV[®]: Welfare technology in service provision for elderly family care givers

CaringTV is a gerontechnological concept produced and piloted using a principle of partnership. The work and responsibilities related to creating the solution were

delegated such that the City of Espoo was in charge of recruiting and training the family care givers who participated in the project, and of securing privacy; the project workers were in charge of handling the videophone contacts coming in from family care givers to the CaringTV call centre, while also acting as support staff in any problem cases; Laurea, with its expertise, was in charge of producing content and for researching and developing the concept (including effectiveness and impact assessments); while TDC-Song was in charge of providing the IP technology devices, ensuring their functionality and providing expert consulting on them.

TDC-Song developed the technology for CaringTV together with Laurea, Videra Oy and other subcontractors. It has been shown that technology cannot produce the desired good life for elderly people if the welfare services related to it are not appropriate to the users' life situations. The service content of CaringTV was built in a customer-oriented way, using a dialogic service production method, through collaboration between service-providing workers of the City of Espoo and lecturers and students from Laurea's Welfare and Hospitality Management fields.

A major part of content production is defining and describing the content production process. It involved defining the content of the service and the structure of the user interface. The task of the content production team was to answer the following questions: 1) What is the content of CaringTV services and how is it produced? 2) What do we want to communicate to users about the CaringTV service, and how?

In a bidirectional interactive relationship, both parties influence each other. Interaction is an interpersonal, continuous, situational process of interpretation, during which important information is communicated, other parties are influenced, connections are created and feedback is received (Himberg & Jauhiainen 2000; Karlsson 1994). Interaction consists of two forms of expression: the verbal and the non-verbal. The non-verbal comes from facial expressions, gestures and other non-linguistic forms of communication. Verbal interaction occurs through spoken and written language and how it is understood. The meanings of words can change from one culture to another, and people can understand them differently depending on their experiences. Meanings can also be built on the basis of reason, beliefs or intuition. Meanings can appear before linguistic structures (Rauhala 1986; Himberg & Jauhiainen 2000). Human interaction forms a social field consisting of verbal and physical communication and non-verbal communication (Dunderfelt 2001). Professional interaction is a many-sided skill based on knowledge and learning. Interaction can be one way of observing the actions of

people who cannot talk about themselves or their aches and pains. It can involve informing, advising and teaching, with the worker's approach being more guiding and active than the customer's (Pearce 1997).

4 Action research in a research to promote coping at home for family care givers

4.1 Purpose and aims of the research

The purpose of the Coping at Home research is to produce a customer-driven service concept that promotes living at home among elderly family care givers, and to evaluate the effects of the resulting concept from the points of view of carer families, the City of Espoo and the concept producers. It is intended to produce research data for welfare organisations to use regionally, nationally and internationally in relation to facilitating living at home and delaying institutionalisation.

Research aims:

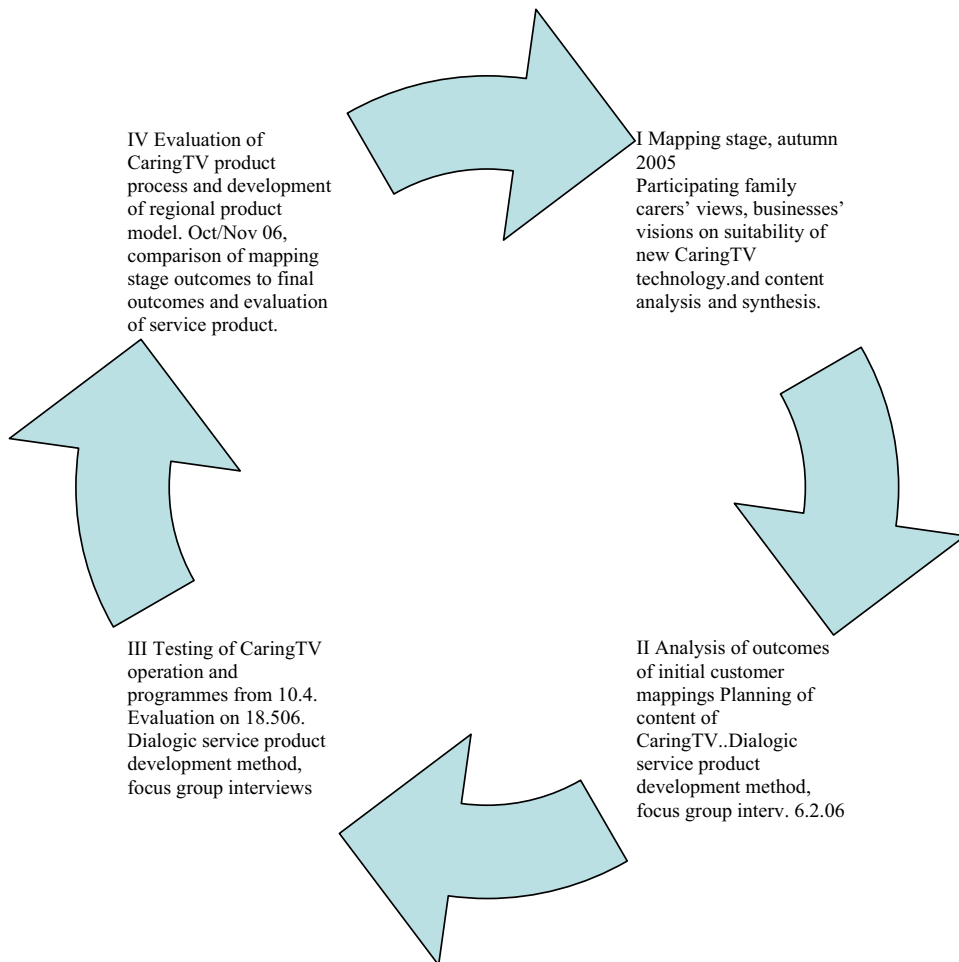
1. To examine the perceptions of family care givers who live at home regarding their ability to cope at home.
2. To examine the expectations of family care givers who live at home regarding welfare technology.
3. To investigate the collaboration process that led to the creation of the new CaringTV gerontechnology solution.
4. To examine what kinds of elderly family care giver users the CaringTV concept has.
5. To evaluate the benefits that elderly family care givers' families feel they have received from the CaringTV concept.
6. To evaluate what benefits the CaringTV concept has brought to the elderly services that the City of Espoo has in place for family care givers.
7. To evaluate how the participants feel they benefited from participating in the product development.

8. To evaluate what significance the production of CaringTV programmes has for the students' learning process.

The research will generate knowledge and develop an operating culture that utilises technology. Action research is used to achieve interaction between practical action and theoretical research (Hopkins 2000; Heikkinen et al. 2006). Action research combines theory and experiential data with change. Its core question is: How do different interests and knowledge bases construct a shared search for alternatives through joint learning? Its starting point is the status quo and how that can be changed collaboratively (Kirjonen 1999). Change is initiated by understanding and developing one's own work, which causes the worker to reflect on his or her own practical experience. Participation in the research allows for the action research to be tied to professional growth (Stenhouse 1975; Heikkinen et al. 1999). The project's participants are continuously involved in the development and research (Whyte 1991; Hopkins 2000). It progresses according to a practical approach, from initial mappings to a refined plan (cf. Figure 2).

4.2 Two cycles of the Coping at Home research

A characteristic way to initiate action research is through interaction with participants. The ideal is a reflexive, critical type of interaction that helps the researchers, educators and participating experts and municipal workers jointly examine reality and activity. The Coping at Home research was implemented through two action research cycles, where the first cycle produced a preliminary concept for CaringTV, and the second cycle developed its wireless control and evaluation tools and assessed their functionality from the point of view of different services. The first action research cycle consisted of four stages (cf. Figure 2). I. The initial mapping stage examined the life situations of the research's customers (elderly family care givers), with participants pointing out the problems that the CaringTV services and programmes were directed to address. The starting points were the varying visions of the participating elderly family care givers, patients, City of Espoo employees and programme-producing students.



(cf. Hopkins 1988, 1995, 2000; Heikkinen et al. 2006)

Figure 2. Action research as a way of structuring the Coping at Home I research project.

At the commitment stage (II), the focus shifted to producing the CaringTV technology and installing it for the family care givers to use. Employees from the City of Espoo provided guidance and support for customers during installation. At the implementation stage (III), Laurea's welfare experts and students produced some of the content for CaringTV, while EEVA team members and FysioSporttis Oy employees produced personal services for customers from the CaringTV call centre.

At the evaluation stage (IV), the functionality of CaringTV was assessed using fourth-generation multisource assessment (Øvretveit 1998; Vaarama et al. 2006). Evaluations were conducted from the points of view of workers, customers, programme producers and process operation.

At the beginning of the research, it was agreed with the City of Espoo that the participants in the development of CaringTV would be family care givers aged over 70 who were living at home. The first stage of the research used CaringTV to form a bidirectional, image-based, verbal and non-verbal connection between elderly family care givers in Espoo and welfare experts. CaringTV is a platform for encounters in the social field, where the customer and expert meet to share expertise. Successful meetings, support messages, therapy, interaction in the assistance situation, rehabilitation, service guidance and dialogue help people to identify their own needs and resources and therefore to get a grasp on controlling their lives. Interactive assistance listens to people and supports their resources, helping them to solve daily problems and creating experiences of empowerment (Mattus 2001; Määttä 2001). Joint experiencing and the sharing of experiences can take place in one-on-one discussions or peer and support groups.

The second stage of action research was implemented as a new process (cf. Figure 3), with the family care-promoting CaringTV concept created during the first stage as a basis for the process. The second stage saw further development of CaringTV's participatory programming, guidance and advice services, and produced a new wireless CaringTV marketplace, which allowed for the family care givers' state of health to be evaluated at home. Programme operations were systematised into daily productions by students, diverse experts, organisations, church groups and companies. Guidance and advice services were expanded to become regular reception times by medical and physiotherapy experts, using a virtual service marketplace.

Gerontechnology was developed in cooperation with participating family care givers families, other service and technology providers, students and lecturers. They were involved in creating ideas and evaluating the adoption and usability of expert programmes, guidance and advice services, and electronic indicators (weight, blood pressure and blood sugar measurements). CaringTV was linked to the Welfare degree programmes at Laurea Otaniemi. It made use of, for instance, Laurea's studies in research methodology and process modelling, as the CaringTV service process was modelled for each user family. ActivityLab (a measurement and testing lab for functional ability) was utilised in evaluating

strain measurements. The usability of the service marketplace was tested by three family care givers in October/November 2007.

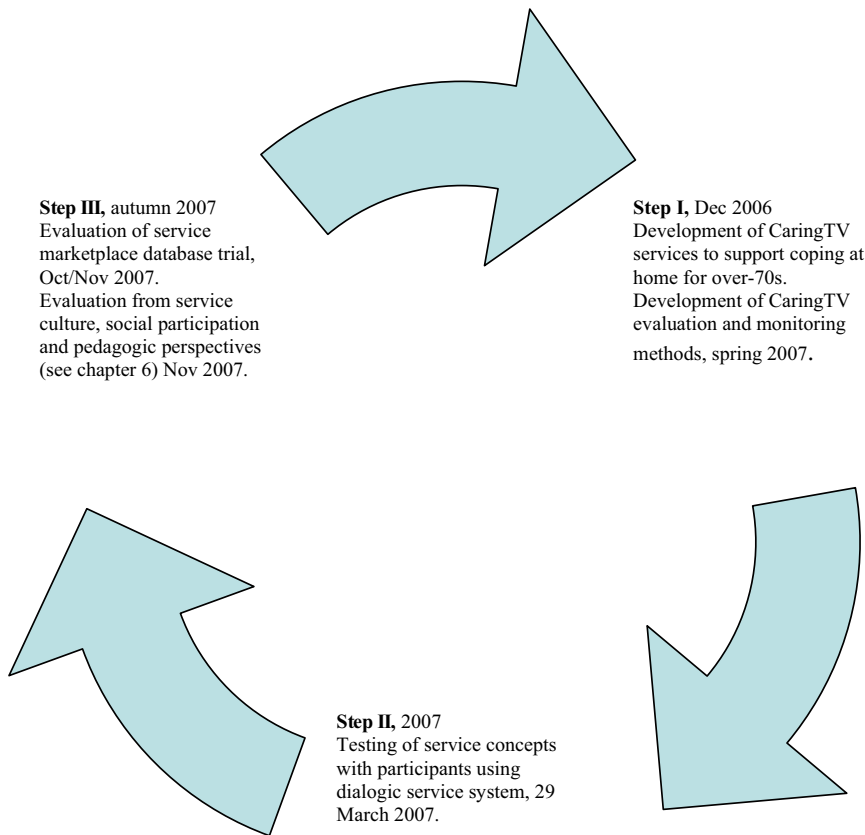


Figure 3. Development of services, evaluation and monitoring of coping at home in second-stage action research (cf. Hopkins 1988, 1995, 2000; Heikkinen et al. 2006).

4.3 Evaluation of the action research

Coping at Home was implemented according to the principles of action research (cf. Hopkins 1988, 1995, 2000; Heikkinen et al. 2006), but programme evaluation, developed by Fischer in particular (1995) was used for assessing the pro-

ject. Fischer notes that evaluation is by nature empirical and normative and progresses stage wise. The actual evaluation consisted of analyses at two different levels. Data gathering made use of diverse quantitative and qualitative research methods, while the second stage, the interpretation stage, required relativisation skills. The Coping at Home research led to the creation of the CaringTV concept together with elderly family care givers. The concept will be evaluated at the first stage (technical empirical analysis) and at the second stage (contextual analysis) to find out whether the targets set for the Coping at Home projects were purposeful and reasonable. Stage I is described in Coping at Home Research Report I (Piirainen & Sarekoski 2007).

This report focuses on evaluating stage II, assessing the social significance of CaringTV and striving to extend the discourse to the extent that it is possible for a product at such an early stage. In this research, the authors of the evaluation research cooperated closely with the production team but did not participate in the production work. Thus in terms of interactiveness, it can be considered a wholly interactive evaluation (Virtanen 2007, 133 – 138).

In the action research process, data was acquired in different ways at the various stages of the development process. Data gathering was directed at all the participant groups, i.e. family care givers families, City of Espoo employees, service producers, technology company representatives, students and lecturers (cf. Figure 4). The research received a research permit from the Espoo social service and health department in 2006. Permission was also obtained individually from each family care giver.

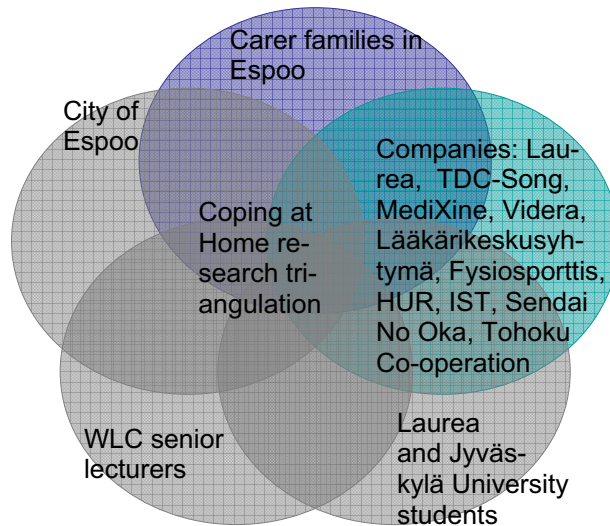


Figure 4. Groups of participants in the *Coping at Home* research.

Data gathering methods and implementation

At the mapping stage, focused interviews (Hirsjärvi et al. 2001) were used to investigate the family care givers' life situations and expectations regarding welfare technology. The researchers also examined the family care givers' quality of life (15D, Lawton 1991), independent coping, stress levels (stress survey by the Finnish Institute of Occupational Health) and socioeconomic backgrounds. An analysis of the outcomes of the data gathering process led to the creation of a model for successful family care giving, similar to the model for successful aging. On the basis of this model, the content themes and services to be produced in the project for the gerontechnological innovation, CaringTV, were planned. The contents and services were specified and concretised during the project using a dialogic service product development method.

The dialogic service production method is a processual way of creating customer-oriented service content. Essential to the dialogic service product development method is maintaining dialogue between the customers and the service producers throughout the product development process. Central to the service process development are face-to-face service product development meetings

between the customers and the service producers. These product development meetings consisted, in accordance with Nonaka & Takeuchi's (1995) theory, of a change process which uses dialogue to create service product contents. The meetings produced research data on the basis of which the operation and programmes of CaringTV could be specified in discussions between the producers and customers.

The dialogic service product development meetings were built on the customers' concepts and expectations regarding CaringTV and its content, which were found out at the first stage. The meetings used focus group interviews (Morgan 1997; Sofaer 1999; Price 2002) and participatory observation (Frow & Morris 2003) to gather information on how CaringTV would be perceived by the different participant groups. Four dialogue meetings were carried out at the Well Life Center (6 February 2006, 18 May 2006, 9 November 2006 and 29 March 2007). They involved a total of 166 people. Each meeting had an average of 42 participants, with 15–21 family care giver family member, 4 – 16 students, 5 – 7 business representatives, 3–5 representatives of the City of Espoo and 4 – 7 lecturers at each time. The meetings consisted of focus group interviews of between 35 and 55 minutes. The interviews resulted in 111 pages of transcript (1.5-spaced). The topic of the focus group interview on 6 February was expectations regarding new welfare technology and the content of CaringTV programmes. The meetings of 18 May and 9 November discussed the participants' experiences of installing and using CaringTV and of the programmes, with development suggestions. The final dialogue meeting of 29 March was intended to examine the family care givers' and their patients' experiences of how well CaringTV worked, and their expectations regarding the extension of CaringTV services to include health-related measurements, strain evaluations and use of the communication channel. The dialogue meetings became platforms for critical evaluation of the research project and of the CaringTV technology under development. Participants evaluated each completed stage from their own perspective in individual speeches, and the focus group interviews became forward-looking, encompassing expectations of the future.

Stage III of the action research concerned the production of CaringTV programmes and virtual health services. Experiences related to the family care givers' life situations and to image-based interaction were investigated using focus group interviews and focused interviews, organised at dialogic service production meetings and in the family care givers' homes in May-June 2006.

The research project shifted into its second action research cycle (cf. Figures 2 and 3), where the focus was on creating evaluation and monitoring tools in Car-

ingTV, which conceptualised the CaringTV innovation. CaringTV was linked to Laurea's curricula in the Social Services, Health and Sports, Hospitality Management, and Business and Administration degree programmes. It made use of studies offered by Laurea in research methodology, process modelling, aging-related programme production and thesis writing. AcitivityLab (a measurement and testing lab for functional ability) was utilised in evaluating strain measurements together with the University of Jyväskylä (cf. Suomalainen & Mäki 2008).

The usability of the concept that was produced was evaluated at the end of the stage II action research from the perspective of users and various other players (Øvretveit 1998; Vaarama et al. 2006; Fischer 1995; Virtanen 2007). The data gathering method consisted of group interviews (Morgan 1997; Sofaer 1999; Price 2002) conducted with 21 participating family care giver families and five families that had previously participated, in their homes, on 18 May – 2 June 2006 and 10 October–13 December 2007. At the same time there were reviews of the initial mappings of the family care givers' quality of life (15D), stress levels, strain levels (MetPro; Ainsworth et al. 2000; ISO 2004; Nikander et al. 2006) and socioeconomic backgrounds. The project was evaluated from the perspective of the three City of Espoo employees who participated in the research, using focused interviews conducted at their workplace between 19 and 30 October 2007. The interviews resulted in 44 pages of transcript.

The assessment of students participating in CaringTV focused on their experiences regarding the production of programmes, and on their own productions using V-heuristics (Åhlberg 1993a, 2002c). The assessment of students participating in CaringTV focused on a single student group's theme writings on programme production, and on their own productions, created using V-heuristics (Åhlberg 1993a, 2002c). With regard to participating students, programme production was also evaluated for two other student groups on the basis of thematic writings (Hirsjärvi et al. 2001, Silverman 2005) by 14 students who had produced programming for CaringTV. In order to include a lecturer perspective, data was gathered from participating lecturers using an unstructured email questionnaire on 19–21 December 2007 (Silverman 2005; Denzin & Lincoln 2003).

From the point of view of businesses, the functionality of the service concept was evaluated with thematic writings on their ideas (Denzin & Lincoln 2003; Hirsjärvi et al. 2001; Silverman 2005). Business representatives wrote about their opinions regarding the benefits of the project and on cooperation during the project. A total of eight pages of thematic writing were produced. The participating businesses' concepts of commitment, project roles, aims and their fulfilment during the first stage were investigated by Rainio and Rautiainen (2007, 43) in a

focused interview with business representatives in May 2007. An analysis of these interviews led to the creation of a model for following up on the development and effectiveness of stage II.

Implementation of the action research

An initial mapping was conducted as part of the action research for 25 family care giver families, in 2005 and early 2006. During the project, eight family care givers stopped using CaringTV due to the death or institutionalisation of their relative or to their own state of health. At the initial stages of the project, four families were chosen to replace those who had left the project, but towards the end of the project in 2007, no new users were brought in. The final interview stage involved 21 families. One family declined to take part in the final interview due to a critical life situation. Final interviews were conducted between 10 October and 13 December 2007, with 16 taking place in the family care givers' homes and five at an earlier stage, after the families had left the project, between 18 May and 2 June 2006. In other words, final interviews were conducted with 26 family care giver families, of whom eight had either lost their care gived-for relative or placed the relative in long-term institutional care. The interview topics were: 1. the family care giver family's current life situation; 2. how well the family care giver coped at home; 3. expectations/experiences of CaringTV; and 4. other matters. At the final stage there were 232 pages of transcript on family care givers. The interviews were carried out initially (2005) by students of Bachelor's degrees in Social Services, and later (2007) by two researchers. Initially there were 199 pages and in the end 232 pages of interview transcripts (1.5-spaced).

Data analysis methods

The analysis methods for family care giver interviews were narrative analysis and content analysis of the focused interviews (Tuomi & Sarajärvi 2006; Denzin & Lincoln 1998), as well as descriptive SPSS analyses. Both content analysis and narrative analysis were applied to the interviews (Polkinghorne 1988; Heikkinen 2002; Hänninen 2004). Narratives are used to structure events in relation to their position in the plot. Narrativity is related to the mutual order and relationships between events. Meaning is carried through order. The word order of sentences is significant if it affects their meaning (Polkinghorne 1988, p. 143). A personal note is contributed by the narrative tone that is characteristic of humans; this basic orientation determines what kinds of narrative models people

are susceptible to use in each life situation (Hänninen 1999, p. 53). Narrative analysis was used to define the various family care givers customer relationships (cf. Chapter 6.1).

5 Family care giver's CaringTV[®] concept

The family care givers' CaringTV concept is built upon the success of family care giving. In this chapter we will first address how the success of family care giving was realised in accordance with the perceptions of family care givers. Then we will examine the nature of the CaringTV concept, which comprehends guidance and support services, the production of participative programmes and technical remote services (see Figure 5).

The bases for production of the new gerontechnological service were future users, family care giver family concepts concerning the necessity of the service and expectations of the technology. In this case the research objective was initially to determine what perception the family care giver families participating in the research had of coping at home at the beginning and end. The second research objective was to determine what expectations the participants had regarding welfare technology services (see Chapter 4.1).

The results obtained from a preliminary survey showed that family care givers were responsible for providing care to an over 70-year-old wife, husband or former domestic helper. Of those participating in the research, 14 were women and 11 were men. Their average age was 77.7 years, ranging from 69–85 years (see Figure 4). Family care givers participating in the research were older than family care givers on average in Finland (Voutilainen et al. 2007). Of these, 61% had attended university and 22% vocational school, 60% had earned a university-level degree and 12% had no vocational training. Of these, 50% are quite satisfied with their lives and 43% are not particularly satisfied or dissatisfied with their lives. In regard to their health, 11% of the people within the same age group felt that their health was excellent, 11% felt it was quite poor, and the remaining 78% felt it was reasonably good. 58% considered their mobility to be normal, 21% experienced difficulties with indoor mobility and 21% experienced considerable difficulties with outdoor mobility (cf. Piirainen & Sarekoski 2007). At the

end of the research the average age of family care givers participating was 78.5 years. Ages ranged from 62–87 years. Of these, 12 are women and 9 are men.

The following section will address the initial perceptions held by family care givers families concerning their life situation.

5.1 Family care giver perceptions as a basis for the Car-ingTV[®] concept

Based on a content analysis (Denzin & Lincoln 2003, Tuomi & Sarajärvi 2006) of thematic interviews conducted with family care giver participants in the research, four main categories were created to describe their life situation: Unsafe, Action competency, Participation and Work of the private family care giver (see Table 1).

Table 1. Family care giver perceptions of their life situation

Main category	Subcategory
Unsafe	<ul style="list-style-type: none"> • Cannot cope with the care receiver alone, needs assistance in emergencies • Slow access to health care services – can specialist instructions and advice be provided via TV? • Concern for significant other when family care giver is absent – can TV serve as a surrogate?
Action competence	<ul style="list-style-type: none"> • Functional capacity weakened • Change in marital relationship • Limited social interaction
Participation	<ul style="list-style-type: none"> • Private family care giver forgotten at home • Working together gives strength • Peer groups with similar interests help maintain motivation
Work of the private family care giver	<ul style="list-style-type: none"> • Family care giver inexperienced in providing care • Family care giver unable to cope with the work • An easy programme entertains the care receiver and gives time to the family care giver

Family care givers perceptions: Unsafe

The perceptions of family care givers regarding Unsafe are divided into three subcategories:

- a. Cannot cope with the care receiver alone, needs assistance in emergencies;**
- b. Slow access to health care services – can specialist instructions and advice be provided via TV?; and**
- c. Concern for significant other when family care giver is absent – can TV serve as a surrogate?**

Family care givers feel that they cannot cope when they do not receive any assistance in situations where their own abilities are overtaxed. They do not dare let exhaustion take hold, as this would leave the care receiver alone. They feel that their life situation as a family care giver is insecure and they cannot cope with every situation alone. They experience a feeling of insecurity when services are not available in time and exhaustion when they are constantly responsible for the well-being of their significant other “25 hours a day”, as the participants put it. Six of the interviewees (4, 6, 7, 8, 18, 20 and 24) said they expected Car-

ingTV to provide them with security and the ability to cope in the most difficult situations at home.

a. Cannot cope with the patient alone, needs assistance in emergencies

Family care givers felt that their life situation was occasionally insecure, when the significant other needed assistance that was beyond the carer's own abilities. Family care givers felt that they could not get help when the care receiver most needed it. One example cited by family care givers of assistance requiring great strength involved situations where the care receiver fell down in a tight bathing space. They described how they had access to a safety phone and phone, but did not bother to call for assistance because they felt the need was insufficient to warrant such a call.

One female family care giver described the need for emergency assistance as follows: *"The feeling of worry is always first and foremost on your mind. Everywhere you have to show people what's gone wrong – the hurt of the world. A couple of times my husband fell down, only his legs were visible when I got home. There's no help around here for that kind of lifting. Everyone's off at work somewhere else. House calls are hard to get. Now we have a safety phone for when he gets dizzy and falls or collapses. That way, I can run errands quickly. I get free time when he's sleeping. I can't go anywhere – not church, the beauty salon – I just rush back home. I don't dare go away for any longer than I absolutely need to. Sometimes I'm so exhausted that I just break down into tears and wish I was dead. But then there's another emergency there with him and he's all alone."* (1, 1 and 3)

b. Slow access to health care services – can specialist instructions and advice be provided via TV?

Family care givers felt that health care services took a great deal of time. They felt great pity for their disabled loved one, who was forced to wait for the service to arrive and then be carted from one service facility to the next. They saw Car-ingTV as an opportunity to receive assistance from a health care specialist right at home. In such cases the assistance would be, in their view, right on time, would not tax the strength of their significant other, and would give them a sense of security when living at home.

One family care giver described the need for a sense of security, how *"... it might be a crucial aid. Emergency services can't really be used for anything except emergencies. And then there's the whole trip to the health care facility, where you can wait for hours before talking to a soul. If only this TV thing could do something about it. Like when the husband [care receiver] had a speech impediment and sometimes had to go to the Tapiola Health Centre on-call service, where we had to wait for three hours before getting to see a doctor, who then re-*

ferred us to Jorvi. This naturally took a long time. Could this TV thing improve these kinds of situations? A professional could see the case. (8, 8–9)

c. Concern for significant other when family care giver is absent – can TV serve as a surrogate?

Family care givers felt bound to their care receiver, even when they were taking care of household chores, shopping, at the pharmacy, looking after their own health, at the hairdressers, etc. The family care giver's responsibility for their care receiver also brought that concern into other areas of their life. Concern for the well-being of their significant other followed them everywhere. They saw CaringTV as an opportunity to give them time for themselves and break free from the constant worry for their loved one. It was desired that CaringTV would serve as a temporary surrogate carer, which would provide the significant other with a sense of security while the family care giver was gone.

As one male family care giver said: "...what would be really helpful is the opportunity to use a videophone. Whenever I'm away, she won't feel alone or like she was abandoned. She'll have contact with the videophone ... of course, she can use it to communicate her needs, but when she has these two diseases, which can cause unpredictable seizures requiring immediate medical attention, it'd be great to have a medical emergency bracelet – one of those self-learning ones – which would learn to recognise an epileptic seizure [...] and alert the medical authorities." (24, 3, 5)

The perceptions that family care givers had regarding the feeling of insecurity were divided into a constant worry about getting help, their own personal feeling of inadequacy and freedom from the feeling of responsibility for giving care. The perceptions given by family care givers have also come up in previous studies. The constant dependency that family care givers have on their care receivers has been addressed in numerous studies and no real solutions have been found for this phenomenon. The major concern that family care givers have for their care receiver relations and providing care to the point of exhaustion have also been discussed in previous studies, with the transfer of care giving responsibilities to facilities providing interval care given as a solution. The care receivers of the family care givers participating in this research also spent one or two weeks a month in interval care at a private service facility or a facility run by the City of Espoo. The time spent away from the care receiver was described by family care givers in three different ways: 1. a rest period; 2. looking after my own needs; or 3. a holiday to visit with other family and friends. The transformation from insecurity to security gave family care givers the opportunity to break free from their role as carer within a day, thus promoting their ability to cope.

Family care givers perceptions: Action competence

Of the family care givers interviewed, every second individual experienced a loss of action competence in situations requiring the administration of care. Twelve of the family care givers expected CaringTV to provide them with assistance in promoting action competence. (1, 2, 3, 4, 8, 10, 13, 15, 16, 17, 19 and 21). Family care givers felt that their action competence was inadequate, particularly in situations requiring a great deal of physical strength, where they were expected to lift a fallen significant other or carry heavy shopping bags or other loads. Family care givers felt that it was difficult to improve their action competence in their own life situations, in which simply leaving the house was, according to them, not possible and they did not have any opportunities to engage in their own hobbies or social relationships, do anything that made them feel good, or look for information on how they could promote their own action competence. The main category of family care giver perceptions regarding their action competence were divided into three subcategories: a) lack of action competence in situations requiring a great deal of physical strength, balance and coordination, such as lifting a significant other or carrying objects; b) promoting cooperation; and c) facilitating social interaction.

a. Functional capacity weakened

Family care givers felt that their physical abilities were inadequate in situations requiring physical strength to assist a fallen significant other or carry heavy shopping bags long distances. The lack of strength, coordination and balance also resulted in the family care givers falling themselves. These falls also resulted in accidents occurring to family care givers.

One male family care giver described his lack of functional capacity as follows: "It feels so clumsy, and you have to be so careful doing everything [...] so I don't fall when my wife falls – then we both go down and, then, I have this right arm to boot; I mean, I can still use it and all, but not [...] yeah, I just don't have it – my wife falls down and then we've been to Jorvi a few times, so it's maybe [...] it doesn't get any better [...] I [...] can't meet up with others [...] because of my wife, because, well, she won't enjoy herself – the moment we visit somewhere, she says she wants to go back home. Well, when all is said and done, I'll probably be in such bad shape soon that I won't be able to [...] able to take care of my wife." (2, 6–7)

b. Change in marital relationship

Family care givers found that continuing their life together with a close relative added strain to marital relationships. Continuous care changes the marital relationship and also introduces factors that tend to separate the spouses. They do not understand each other the way they used to, when one is constantly helping the other and not receiving any help themselves. The new CaringTV technology was also expected to serve as an aid to enhance the mutual understanding between spouses.

One male family care giver said: *"For example, in emergency situations it might help. The main thing is being there. It's a big deal that you're there, ready to help [...] each other. Now we both have our own aches and pains and [...] and that's the reason we're married, so that we can support each other [...]. That television might bring the family closer together. And the family can learn how to understand each other better."* (3, 8 and 11)

c. Limited social interaction

Family care givers felt that they were bound to their household when the care receiver was at home. They did not dare go for a visit or do anything that did not involve the care receiver. They felt that their own social life was limited by their role as carer. Family care givers also found the availability of assistance to be lacking. Family care givers expected CaringTV to give them the opportunity to meet other people and perhaps even get information and advice on their daily errands.

One female family care giver described the possibilities of CaringTV: *"It lets you see the other person and talk about things and chat. That is so very helpful."* (21, 3) [and another male family carer] *"It makes it easier to get information or visit or exchange opinions or anything you might think of, every day and every week, which means you never have to wonder 'who do I turn to?' or 'what should I do?'"* (6, 4)

Family care giver perceptions: Participation

Nine of the family care givers (1, 3, 8, 10, 13, 15, 17, 19 and 21) felt that their opportunities for participation were limited. They wanted to be doing things and meeting their friends, neighbours and relatives. However, family care giving keeps them tied to their households, thus restricting contact to the phone. They hoped that CaringTV would make it possible for them to participate in group activities and discussions as well as receive assistance at home. The main category of family care giver perceptions regarding their participation were divided into three subcategories: a. the desire to be with other people; b. the opportunity

to do things together; and c. to participate in groups with people in the same life situation.

a. Private family care giver forgotten at home

Family care givers described how lonely they were and how they would like to have contact with other people. They felt that no one cared about them and believed that others had forgotten them in their homes. They believed that talking with others would give them support and strength.

One female family care giver explained: *"I've heard that it's nice in these family carer groups. It's always helpful to be around others in the same boat. I'd love to join one. I don't like talking on the phone for very long. It's nice to be at home – I feel free there. If I wanted a support person, who didn't say no all the time, I'd have to be so exhausted and nearly dead before I got any help. Along with a couple others, we just don't ask. Here, you're on your own, and there's nobody around to ask how you're doing [...] Now we're here on our own. We're told 'no, it's not possible' to everything."* (1, 3)

b. Working together gives strength

The second subcategory listed was the desire to participate in shared activities. Telephone contact was not considered sufficient, rather they emphasised face to face contact. They felt that shared activities provided healing power.

One female family care giver explained: *"I didn't quite understand how to say something on the point. But I wanted to participate, because anything done to make things better is a good thing. And, in turn, things only get better when you try."* (10, 6)

c. Peer groups with similar interests help maintain motivation

Family care givers emphasised the continuity of contact. They considered the groups, which were specifically intended for them and formed by them, to be perfectly suited as social services for their lives. They emphasised that only they, family care givers in the same situation, could give each other operating guidelines. They mentioned going through the war and stressed that having peers in the group would make it possible for them to share common problem situations and life experiences.

One female family care giver explained: *"There are these kinds of groups, where you think it might be nice to do something together with them."* (25, 7)

Family care giver perceptions of care giving work

Interviews conducted with family care givers produced a fourth main category describing their work, which was divided into three categories: a. family care giver inexperienced in providing care; b. promoting the family care giver's ability to cope; and c. care receiver contentment gives the carer time to rest. Nine family care givers discussed their work.

a. Family care giver inexperienced in providing care

Family care givers talked about their lack of work experience, how they needed instruction and advice on how to get help and support for their work. They encountered their lack of experience in how to assist and lift their significant others when the care receiver was unable to do that themselves. They found out that they were unaware of various home care aids, and did not know such items were available. They found that they were unable to fill out various application forms and were unaware of various aid and assistance opportunities.

One female family care giver said: *"Well, you can't take care of everything – there are some things that you have to learn, like those lifts and you have to know what to do. I'm sure that not every wife knows what to do to take care of her husband ... I didn't know the first thing about that board thing, but one doctor told me about it and about that round thing, whatever it's called, that [...] And it's useful for this and that. It would surely be good for a lot of people [...] well, maybe not everyone, but it does help. It would be good to first show us how to use this equipment and where, with what kinds of patients, that kind of thing [...] Like, that one doesn't have legs at all, and even if they did have legs, it would be still be good to use for someone who's weak, someone who can't really get up on their own anymore."* (23, 22)

b. Family care giver unable to cope with the work

Family care givers had some ideas as to how their own ability to cope could be promoted. But they felt that they were not given any support to realise them. They had been provided with self-initiative programmes, which could be used to maintain their physical condition, but no one person kept up with the programme on their own.

One female family care giver explained: *"I've become such a homebody that now I'll only go out when someone comes to the door to fetch me [...]. I have this sort of exercise programme that takes about 45 minutes, but I have to do it every day so that I can be more mobile – I've had it for years but have yet to do anything with it [...] rehab or exercise keeps you in shape."* (25, 7)

c. An easy programme entertains the care receiver and gives time to the carer

In the interviews conducted, family care givers explained how the care receiver is content and that they have a schedule which does not require a separate rest period. The broken and short period of night sleep of care receivers wakes them early in the morning. Family care givers reported often being up at night, which made them so tired that the early wake-up in the morning was very difficult. The family care givers described how the easy-viewing morning television programmes entertain their care receivers to such an extent that they are able to sleep and rest longer in the morning. The easy-viewing television programmes, which are designed for adults, give the family care givers time to rest. Four of the interviewees mentioned that the programmes entertained the care receivers, thus making the carers' work easier (4, 7, 10 and 20, 25).

One female family care giver explained: *"Yesterday, just by chance, I turned on the TV for my husband and there was this really everyday show on, which was about this meeting of elderly people – it was very normal, familiar, so I thought that these kinds of shows would be very helpful. And it doesn't even have to be about elderly people, just something easy to digest about familiar things. The patient can't really follow the plot lines anymore – he's always asking me why so-and-so did this or that – but he's not so far gone that he'd want to watch children's shows."* (10, 6) Another female family care giver said: *"Well, in the morning he has the television at the foot of his bed and he wakes up extremely early and it's like [...] what's on the TV. I can't remember how many channels there are, but he turns it on in the morning [...] and then he reads the paper. It's not that he can't read, but this is a person who's been waited on for 80 years [laughs ...] Well, there's a lot of help holding up the pages and, well, even when I read the paper I read the words aloud."* (25, 2)

Family care giver work requires special expertise, according to the family care givers participating in the research. They place special emphasis on the ability to seek help in administering care, particularly when the carer feels they cannot cope. The family care givers in this research also felt that they did not have any alternative except to take care of their spouse. This research found that it was not only women, but also men who had a deep sense of obligation, as was found earlier (Saarenheimo & Pietilä 2003, pp. 22–23). Family care giving was considered demanding and its main problem areas are being constantly housebound, working round the clock, a personal lack of physical abilities necessary to the work and unfamiliarity with housework, especially among men. However, the family care givers wanted to continue administering care and appreciated their work.

The main categories are adapted from the Model of Successful Aging (Rowe & Kahn 1997), except for where security turned out to be a significant factor for family care givers living at home. It was not included as a key element in the Model of Successful Aging (Rowe & Kahn 1997).

CaringTV served as the platform for building a virtual health care clinic, which unites patients and the providers and developers of health care services and programmes. Successful aging studies have shown that people themselves have the ability to influence the success of their aging perhaps more than was previously assumed. Living habits largely define the development of health and functional capacity as they age. The attributes of the physical living environment, work and working conditions, financial situation, services, social relations, friends, prevailing social values and attitudes (Heikkinen et.al. 2003, pp. 333–334).

Maintaining adequate functional capacity is one of the cornerstones of successful aging. The level of activity a person has can either maintain and rejuvenate or damage their functional capacity. As a person ages, the goal is to retard the weakening of functional capacity by making every effort to prevent disease and by maintaining physical performance and cognitive abilities with an active lifestyle. At an advanced age the threshold for independent living can be lowered by altering the physical environment and increasing social support. By taking these kinds of measures, a satisfactory quality of life can be maintained, even when a person's own resources deteriorate to such an extent that it is no longer possible to function on any one of them alone (Heikkinen et. al. 2003, pp. 333–334).

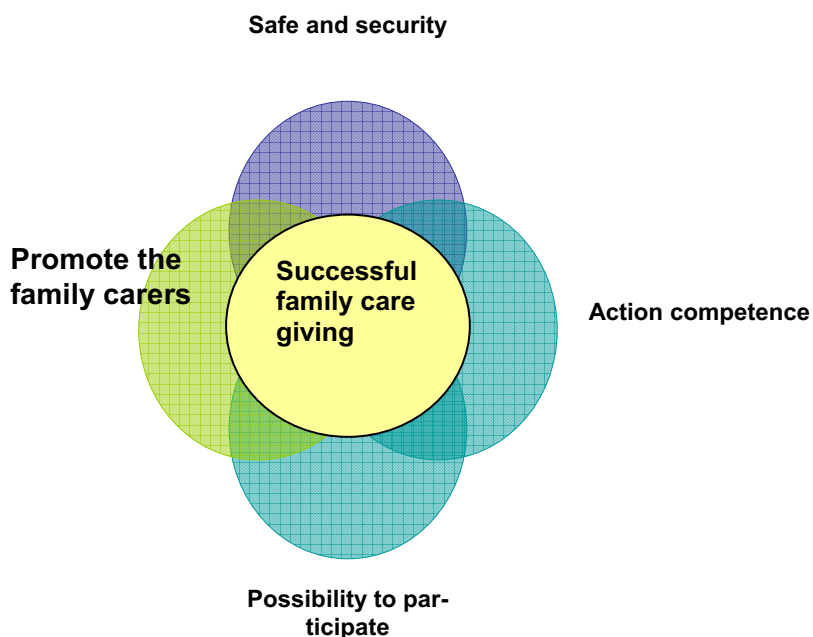


Figure 5. Successful family care giving. Family care giver perceptions of their own life situations according to the content analysis of thematic interviews conducted in the preliminary Coping at Home survey. Successful family care giving requires the success of these themes in order to make home care possible (cf. Rowe & Kahn 1997).

Vaarama (2006) examined the quality of the home care service provided by the City of Espoo. The results of the research are congruous with the results of Care Keys in five countries. According to this, home care can be used to support the client's adjustment to his own aging and quality of life, provided that the service is client-oriented and respects his autonomy and professional skills, is friendly and empathetic, as well as meets the client's needs for cleanliness and a clean home (Vaarama 2006, pp. 28–30). The CaringTV concept, which is geared toward family care givers, also emphasises a client-driven approach, which respects the autonomy of the family care givers.

5. 2 Producing the client-driven CaringTV[®] concept

The basis of the Coping at Home research project was the aging family care giver as client, which, in turn, served as the basis for creating an analysis of successful family care giving. The challenges which gerontechnology can tackle were defined on the basis of successful family care giving. Technologies designed to promote the welfare of aging people were implemented in the research project. CaringTV devices produced in the research project were installed by the City of Espoo in the living rooms of 25 family care giving households, primarily in February–April 2006 (see Image 1).



Image 1. CaringTV in a family care giver's home

CaringTV comes on and is operated using a touch-screen (see Image 2); there is also a touch-screen menu of the broadcast programme (see Image 3).



Image 2. CaringTV touch-screen

The image shows a broadcast programme screen titled 'LÄHETYSTARJONTA' (Broadcast Offer) with the CaringTV logo. It displays a weekly schedule for the week of 18.09. - 24.09. The schedule is organized into columns for each day of the week (MA, TI, KE, TO, PE) and rows for specific time slots.

MA 18.09.	TI 19.09.	KE 20.09.	TO 21.09.	PE 22.09.
10:00 - 10:30 Aamujumppa Sarin ja Mirvan kanssa	10:00 - 10:30 Tasapainossa eteenpäin	10:00 - 10:30 Aamurentous	10:00 - 10:30 Iloa tanssista	
14:00 - 14:30 Loistava lounas		14:00 - 14:30 Pirstava päivällinen	13:00 - 13:15 Ravinto ja liikunta	

Image 3. CaringTV touch-screen broadcast programme.

After the first research phase, CaringTV was found to be an attractive product for family care givers, according to the results of group interviews conducted at a

service product conference held on 9 November 2006. CaringTV was developed in close cooperation with various actors. This cooperation, particularly between the device's technical experts, programme production, users and service providers, had been a prerequisite for development of the product up to this point, where the device had been tried by 25 users at home.

According to phase I research results, the challenge turned out to be getting participants to commit to the development work. Getting elderly clients to enlist and commit to use of the device was a particular challenge. Those committing to use of CaringTV were given security, functional capacity and social participation with both peers and specialists. However, phase I trials also brought forth numerous challenges for further development.

The second phase of the Coping at Home research focused on the challenges encountered in the first phase. Its goal was to promote the home living of aging clients and their modelling-specified support processes by looking for weak links. It expanded existing CaringTV possibilities and also produced new, innovative solutions for aging client service chains that facilitate a high quality of life. In the second phase, CaringTV's compatibility with Japanese culture was compared together with Tohoku Fukushi University. It utilised information technology and developed new, more cost-effective and quality-conscious client-driven electronic welfare service solutions, such as physician and physiotherapist information services at home between the public, private and third sectors. It continued the development of state-of-the-art evaluation instruments and gauges used in assessing the well-being of and providing guidance for the elderly, blood pressure measurement, blood glucose and weight measurement, and the VAS pain scale, which do not require a specialist house call and can be used in the assessment of contracted services. The workload levels of family care givers participating in the research were also measured in the second phase (MetPro, Ainsworth et al. 2000, ISO 2004, Nikander et al. 2006). It updated and further developed the learning and expertise of project partners/parties through various training interventions in all new simulation environments.

In the second action research phase CaringTV programmes, guidance and support services, and electronic technology services (i.e. Palvelutori) for family care giving were further developed. The family care givers' CaringTV concept was realised in cooperation with family care givers, technology developers, employees of the City of Espoo, and the students, educators and researchers of Laurea University of Applied Sciences. The concept was built with an ear toward care giver families and their essential needs. The service concept was constructed in cooperation, which was confirmed at service production fora held four times dur-

ing the project. The fora evaluated the realised phase and development challenges were produced for the subsequent phase. After each forum, the actors developed the service in a commonly agreed direction.

The research result of the second phase is the client-driven family care giver CaringTV concept, which is comprised of interactive guidance and support services, home services utilising technology and participative CaringTV programmes (see Figure 6).

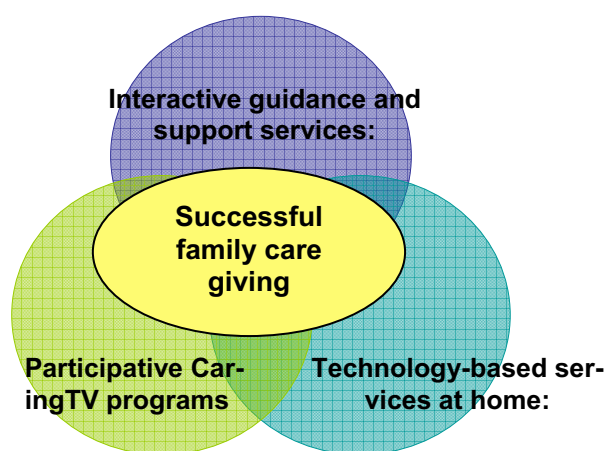


Figure 6. CaringTV -concept for family care givers

The service concept took form throughout the duration of the Coping at Home research. Particularly during the second phase of the research, Guidance and support services formed their own entity, which complemented other services individually and in small groups. Project workers assigned to the City of Espoo's EEVA project, a private physician and physiotherapist are responsible for the guidance and support services in this research. In the following section, we will discuss the services of the family care giver CaringTV concept

5.3 CaringTV's[®] participative programme production

The main objective of CaringTV is to produce participative programmes for family care givers. The Well Life Center was built in march of 2006 for programme broadcasting. Programme broadcasts began in April 2006. The programme content was based on the results of preliminary interviews conducted with family care givers. This ensured that the programmes would facilitate successful family care giving (Piiirainen & Sarekoski 2007). Project workers kept tracking statistics of the programmes produced and people participating in them. A total of 396 programmes were produced during the period 1 April 2006–14 December 2007 (see Figure 7). The programmes were produced by both Laurea University of Applied Sciences students and experts from each subject area involved. Laurea educators systematically guided the student programme production and execution, and evaluated their skills. Students produced 79.3% (314, N=396) of the programmes and experts 20.7% (82, N=396). City of Espoo project workers served as programme “*studio hosts*” for students and experts, and provided support during the programme. At the end of the programme, these employees gave the students and experts their immediate feedback. The goal of most of the programmes was to promote functional capacity.

Table 2. CaringTV family care giver programmes, time, theme and production team.

Theme \ Time	Action competence		Safety and security		Family care giving skills		Possibility to participate		Programmes total
	Student	Expert	Student	Expert	Student	Expert	Student	Expert	
Apr-May 2006	42	-	2	-	4	-	2	-	50
Sep-Dec 2006	63	5	3	-	13	3	3	2	92
Jan-May 2007	53	22	15	-	21	4	32	2	149
Jun-Aug 2007	5	3	-	-	6	6	6	3	29
Sep-Dec 2007	25	28	-	-	3	2	16	2	76
Total	188	58	20	-	47	15	59	9	396

The programmes were produced by Laurea students as well as private, public and third sector experts and employees of the EEVA project. A total of 396 programmes were broadcast. Each programme had 1–11 participants. The average viewership for each programme was 3.1 viewers (Puranen et al. 2007).

Programme production was part of the Learning by Developing -operating model, which involves the integration of educational processes and workplace-based development project processes. The development project is built upon the partnership principle, which means that students, educators and workplace experts work together within the project environment. Learning occurs as the project progresses. When the basis is a genuine, workplace-based development project linked to research, learning comprehends skill requirements, which are

prerequisites for the student's future polytechnic degree (Laurea curriculum 2006–2007, Raij 2007).

The learning environment is constructed as a research and development project. It can be viewed as a knowledge, skill, value and experiential environment. As a knowledge environment, it involves the presence of information related to the development project. As a skill environment, it comprehends the requirement for facilitating the learning of necessary skills. As a value environment, it is based on values commonly recognised and agreed upon by the group that provide guidance and justification for choices and actions. In an experiential environment, the main emphasis is placed on individual experiences and the meanings attached to them as well as sharing these experiences with others in the group. Experiential environments also contain tacit knowledge, which can be shared either through discussion or action to advance the individual's and participating group's learning (Laurea curriculum 2006–2007, Raij 2006).

The learning environment is also a physical, mental and virtual meeting place. A physical learning environment is comprised of various educational facilities, workshops and laboratories. As a workshop, the learning environment can also be seen as a place that promotes professional skills, representing different sectors of the workplace. Culture-based knowledge is conveyed in workshops. Workshops are used to produce tools, concepts and skills, which are needed for the advancement of development projects and personal skills. Laboratories have their own special significance in relation to their intended purpose. As a mental meeting place, the learning environment makes it possible for a wide variety of experts to meet as partners, who discover new possibilities in the differences, develop and refine their own skills as well as those of their partners, and share expertise for the development of the operating environment. A virtual learning environment makes use of technology and facilitates participation, minimising the restrictions of time and space. A virtual environment makes meeting possible from different distances when it best suits the participants. The concept of online learning exists in a virtual environment, where guidance and support services can be found and various learning assignment challenges are tackled (Laurea curriculum 2006–2007, Raij 2006). Content production usually refers to the digital production of cultural, document, educational research, entertainment or marketing programme content and its related service and business functions (Ministry of Education 2002). Programme content production in the CaringTV concept differs in that, due to the possibility for interactive participation, the content exists according to the participants. This has raised new challenges in the planning, execution and evaluation of student and expert programme production.

CaringTV's participative programmes were produced by students, for whom it provided a genuine learning environment, allowing them to develop their media expertise by producing programmes for family care givers. A majority of the programmes produced were morning exercise shows, which were part of the Action competence theme. Home safety and getting around outdoors were addressed under the Safe security theme. Programmes related to the Family care giving skills theme were about nutrition, self-treatment and recreational possibilities. The Possibility to participate theme included discussion programmes about the past and present as well as devotional services. Regardless of the theme, all interactive CaringTV programmes promote the social participation of family care givers (Isoniemi & Niemipelto 2007). During production of the programmes, the students went from somewhat hesitant to highly skilled. A project worker described the students:

" Apart of students were very committed from the beginning. We know this is apart of our curriculum, this CaringTV. .. Then there were students who don't understand and they have even littele negative attitude. They feel even that they 'have forced to participate and make programmes...But afterwards, not so many have negative feelings. So after programmes the negative person was not so like that any more." (tt.1,12)

Leskelä (2007) examined the students' own perceptions of programme production as part of the learning process by collecting data from theme papers written by 14 students, who had produced programmes for family care givers on CaringTV. In the first question, students were asked to describe the research unit with three adjectives. Based on their responses, the opinions were more positive than negative. Even the negative adjectives revealed that the students had not got off easy, but had to work very hard to successfully complete the research unit. The following table lists the responses, divided into plusses and minuses (Table 3).

Table 3. Adjectives used by students to describe the research unit

Plusses	Minuses
<ul style="list-style-type: none"> - interesting (8) - educational (3) - enjoyable - thought-provoking - comprehensive - preparatory - inspiring - multifaceted - interactive (2) - attitude-changing - independent - instructive for group work - fun 	<ul style="list-style-type: none"> - time-consuming - extensive - laborious (3) - somewhat fragmented - sad - shocking (number of participants on CTV) - challenging (5) - repetitive (initially)

Students were asked to evaluate the expertise they gained from the research unit. Expertise was divided into three categories: Working with CaringTV, Working in a group and Different ways to learn. Students had gained the most expertise from working with CaringTV. Expertise comprehended matters related to interaction, presentation and systematic action (Table 4).

Table 4. Student expertise

Main category	Subcategory	Actual quote
Student expertise	Working with CaringTV	<p>"It gave me confidence in working and talking with elderly people."</p> <p>"In my own work I can discuss things better and more with the elderly."</p> <p>"I'm a bit shy about performing on CaringTV."</p> <p>"When planning a programme, the manuscript is crucial to its success."</p>
	Working in a group	<p>"I learned how to take the viewpoints and opinions of other group members into consideration."</p>
	Different ways to learn	<p>"Time management and taking a systematic approach to things."</p> <p>"Skills in doing written assignments."</p> <p>"I had to go through things in more detail than I would've at a lecture."</p>

Students were asked to give a detailed description of memorable guidance situations from the research unit. Guidance situations were divided into guidance received during their own experience with CaringTV and guidance received from others (Table 5). Guidance received from others is divided into Guidance received from educators and Guidance received from other group members. Some of the participants did not recall any guidance situations (Leskelä 2007).

Table 5. Research unit guidance situations

Main category	Subcategory	Actual quote
Guidance	Own guidance situation	"I remember my group's second presentation on CaringTV. It was good, but I was surprised at their comments after the programme. It also gave me food for thought."
	Guidance received from others	"It was good that no one was forced to be on the show – we decided as a group who would actually go on the air." "I have a pleasant recollection of the discussion with the educator after the broadcast."

Students were asked to write about the impact that working with CaringTV had on their perceptions of aging. Based on the responses, their perceptions can be divided into two categories: Reinforced existing perceptions and Changed my views (Table 6).

Table 6. Perceptions of aging

Main category	Subcategory	Actual quote
Perception of aging	Reinforced existing perceptions	"I can't really say that I learned anything special, because in my nearly 20 years working in a health care clinic I've dealt a great deal with the elderly and I'm quite familiar with their life situations."
	Changed my views	"It reinforced my view that even the elderly can learn new things and want to be active participants in social activities. Many manage the daily chores with minimal aid and assistance." "Today's elderly are a marvel. Even though some didn't even have a set-top box yet, they were very good at using CaringTV."

Students were asked to think about their attitudes toward gerontechnology and CaringTV. Their attitudes were mostly positive, but some mentioned their concerns with a reduction in actual human contact. According to the students, CaringTV could never replace actual human contact (Table 7).

Table 7. Attitudes toward gerontechnology and CaringTV

Main category	Subcategory	Paraphrased comments
Student attitudes toward CaringTV and gerontechnology	Positive	<p>All modern technology is useful when the elderly themselves see it as being good and necessary, and receive adequate instruction in the use of technical devices. CTV is a good example of a highly functional solution and trial.</p> <p>"The first time I heard about CaringTV, I had a negative attitude toward it, but now I see it as a good thing."</p>
Student attitudes toward CaringTV and gerontechnology	Concern for reduction in actual human contact	<p>"CTV might provide good support for daily living, but it can't be used as a replacement for actual human interaction."</p> <p>"My personal feelings about CTV are that it's creepy, frightening, technical. I sincerely hope that home nursing or home care in general, where a person is actually present, is never replaced with something like this."</p>

Students were asked to evaluate how CaringTV could support the coping and welfare of the elderly at home in the future. Responses concerning the future were divided into three categories: Access to information; Option for traditional care; and Technological development (Table 8).

Table 8. CaringTV in the future

Main category	Subcategory	Paraphrased comments
Future	Access to information	"In the future CTV could support the coping and welfare of the elderly at home by disseminating comprehensive information learned in a variety of ways."
	Option for traditional care	"In the future technology will become more and more the daily "form of treatment" for the elderly population." "In the future CTV operations could be expanded to include different formats and, for example, enhance security and anticipatory assistance for the elderly. In short improve the quality of their life and give them more years to live and, more importantly, more life in those years."
	Technological development	"Hopefully CTV can be made to work even better in terms of their needs. Indeed, there is initially room for improvement in the device, but that's something that will happen in the future anyway."

In conclusion it can be stated that the students have wide-ranging attitudes toward the production of CaringTV programmes. For some it was a pleasant experience and they learned and were encouraged to tackle the next broadcast. For others, CaringTV is a device with which they would not like to interact. In their view doing the programme broadcasts felt forced and they shied away from performing on CaringTV (Leskelä 2007).

Naturally, the research unit gave the students skills in the operation of CaringTV, but they also gained experience in group work and various types of learning approaches. For a majority of the students, the interactive guidance experiences were positive ones and they considered CaringTV to be an important tool for the interaction and socialising of elderly focus groups, particularly those who are lonely. Conversely, many students were of the mind that replacing actual human contact with a device felt frightening. The results of an earlier research examining nursing student attitudes showed that the nursing students primarily had positive attitudes toward the elderly, but that they became less positive over the duration of instruction. The research's conclusion stated that the reason for this reduction in positive attitudes is that the students can use the skills they have learned to benefit the elderly in the best possible way (Hirvonen et al. 2004). It

might be possible that the CaringTV technology is challenging enough to the student, that their interest in the elderly would remain a challenge through to the completion of their studies, when the students consider CaringTV to be a future technological solution that helps the elderly cope at home (Leskelä 2007).

5.4 Guidance and support service on CaringTV®

At the beginning of the research project, the demand for personalised guidance and support services was already assumed to be high, so precautions were taken by, for example, getting assistance from the City of Espoo's EEVA project. The guidance and support service could be offered both as a personalised service with an EEVA project worker and, during specified times, a group service on CaringTV.

Personalised guidance and support is provided one-on-one between the family care giver and project worker on weekdays, without requiring an appointment. Another personalised guidance and support service is offered, upon arrangement, during CaringTV broadcast times, where the family care giver and their family also have the opportunity to make an appointment with an individual physician or physiotherapist.

As of October 2007, the City of Espoo employee had logged 105 contacts, a majority of which pertained to the project and technology. There was also discussion of Espoo's services and matters related to family care giving and of a more personal nature. The conversations had been easy and natural. Family care givers were pleased to find that both the family care giver and care receiver or other person living in the household could participate in the discussion. *"As if I'd asked Anne to come over,"* commented one of the family care givers in an interview.

However, the number of contacts with the guidance and support centre has been lower than initially expected, because the family care givers stayed after the programmes to talk with the project worker. Occasionally a family care giver has been instructed to call a guidance and support centre, at which point the conversation continued personally. Family care givers still continue to use the phone a great deal when dealing with project workers. This may be due to the care giver's familiarity and confidence with the use of phones.

The CaringTV telephone directory made it possible for family care givers to contact one another. However, family care givers very rarely contacted each other via the telephone directory function. After programmes, family care givers

often stayed to chat with each other. This was a good way to meet and, if necessary, get peer support from others in similar life situations.

Project workers instructed programme directors on how to use the hardware and the requirements of the interactive programme. Students and experts often wanted immediate feedback on the execution of the programme from the project worker. The presence of the project worker at the broadcast location was considered absolutely necessary to oversee the technical operations and ensure the smooth running of programmes.

The physiotherapists of FysioSporttis Oy have provided group guidance and support on CaringTV. This service started in the spring of 2007 and has been provided five times. According to the results from a survey conducted among participants at a physiotherapist Q&A session, they (2–4) felt that the service met their expectations. They described the physiotherapist as being knowledgeable, attentive, comforting, encouraging, understanding, interested in their issues, secure, trustworthy and unbiased. They thought that the reception was relaxed, expert and friendly. They gave the physiotherapist reception on CaringTV a 9 on the rating scale.

Group guidance and support was provided on CaringTV broadcasts, where a geriatrics specialist from Lääkärikeskusyhtymä Oy was available for consultation every other week starting on 1 March 2007. There were a total of 14 two-hour physician receptions held. Data on the use of physician services was obtained by means of structured interviews. A questionnaire, which was filled out by the family care givers by themselves or, if desired, during the interview, was drafted for the interviews. The questions were the same for everyone. Of the 16 participants responding, seven family care givers made use of the physician services.

Six of the respondents felt that the physician services met their needs and one respondent was noncommittal. The service users thought that the physician's office was pleasant and that it was easy to talk to the physician. Getting to the physician was also considered to be easy. They described the physician as being knowledgeable, attentive, comforting, encouraging, understanding, interested in their issues, secure, trustworthy and unbiased. They thought that the reception was relaxed, expert and friendly. All the respondents felt that they understood the guidance and advice given to them by the physician on CaringTV and that the CaringTV physician was necessary. When asked to rate the physician reception, the grades ranged between 7 and 10. The average grade was 8.6.

The physician said in an interview that she felt the concept worked. In her opinion the trial was interesting and was nearly equivalent to an ordinary practice. She would have preferred having access to medical records, which could not be used in this trial, to support her diagnoses. The remote blood pressure, blood glucose, weight and VAS pain scale measurements taken in the Palvelutori service worked well. The large screen used for CaringTV facilitated its use, compared to a webcam. This successful trial demonstrated that, even without the physical visit to a physician's reception, it was possible to get proper medical attention, particularly in regard to the monitoring and consultation of chronic illnesses.

5.5 CaringTV[®] concept technological remote services – Palvelutori

In the second phase of CaringTV family care givers wanted to also focus attention on the development wireless assessment and measurement applications. As the third part of the CaringTV concept a Palvelutori service was built on the MediXine service platform. Using the Palvelutori service, family care givers have assessed their level of pain using the VAS pain scale, measured and monitored their blood pressure, weight and blood glucose trends at home using instruments specifically designed for this purpose. According to the results of final interviews conducted with family care givers, the Palvelutori readings were exactly what had been expected. For a week, they monitored their blood pressure, weight and blood glucose several times a day and explained that they had compared and considered the reasons for any changes in them. They also gave thought to questions related to the Palvelutori measurements taken at the virtual physician's reception.

In the second phase of the Coping at Home research, three family care givers tested measurement instruments, and the measurement result was sent wirelessly via a Bluetooth connection to the Palvelutori website, which could be accessed at home on CaringTV as well as on the Internet with a user ID and password. Palvelutori also includes the monitoring of the sleep-wake rhythm using an IST Vivago Wrist Care bracelet. Three family care givers used the bracelet for a week.

According to preliminary measurements and interviews, family care givers found their work to be stressful and a continuous, round-the-clock process. The physical care giving performance, efficacy and volume of care giving and other activities, and workload on nine elderly family care givers was examined by students

at the University of Jyväskylä. Their physical workload was monitored for one day using a Sense Wear Armband Pro 2 and the daily activities were recorded in a logbook (cf. Mäki & Suomalainen 2008). In the future the assessment of both the sleep-wake rhythm and workload will be connected to a wireless Palvelutori, thus providing the family care givers and treating physician and medical staff access to the readings. Technological development of the Palvelutori took longer than anticipated and the testing was shorter than intended.

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6 CaringTV[®] – Concept evaluation

The CaringTV concept was realised in cooperation with several different actors. The basis of the action research was to create a new type of service culture, jointly produced by the elderly, polytechnic students, educators, families, private companies, Laurea and the City of Espoo. The objective of the research is an invigorated, self-sufficient and decision-making elderly person, who lives in a social, symbolic and physical environment that establishes a meaningful foundation for him. A change in the service culture comprehends changes in the approaches used by the individual, peer groups, service provider experts and students, municipalities, service providers and institutes of higher education.

Cultural change requires social participation, where citizens actively participate in the building of communities, services and society (Russo etc. 2007). They are linked by both interactive closeness and the establishment of more distant expert and service networks and their participation in them. Participation in cultural change is also a pedagogical process, which requires each participant to question their own expertise and adopt new information so that the productive approaches used by them themselves, groups and services will also change (Pike 2007). In the changing of geriatric service culture social participation (Geissel 2008) and changes in pedagogic attitudes and critical thinking form a dynamic whole. The functionality of the CaringTV concept, which is representative of this new service culture, is evaluated based on cultural, social and pedagogical factors (see Figure 7).

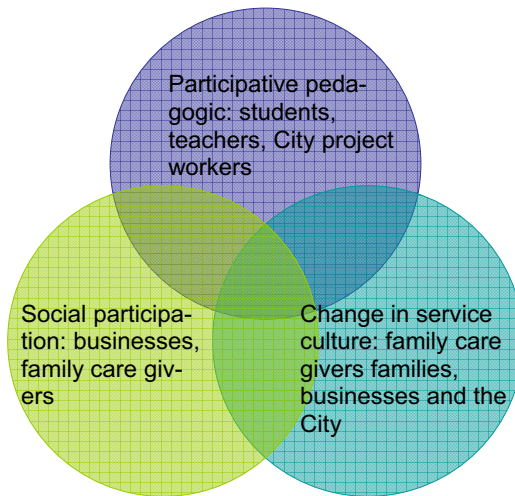


Figure 7. CaringTV concept evaluation factors

The CaringTV concept, which was developed in the Coping at Home research project, could not have been realised without reliable, responsible and development-oriented family care giver families, municipalities, private companies and the students and educators of Laurea University of Applied Sciences. Twenty-five family care giver families residing in the Tapiola district of Espoo, the City of Espoo, FysioSporttis Oy, Helsingin Lääkärikeskusyhtymä Oy, Hur Oy, Hur Labs Oy, Ist Oy (Vivago), University of Jyväskylä, Mawell Oy, Medixine Oy and Videra Oy actively participated in the development of the action research project. The functionality of the service concept was also evaluated by participants according to their own needs. Changes in the service culture are evaluated from the perspective of both participating family care giver families and participating private companies and the City. Social participation is evaluated by the degree of family

care giver interactivity with CaringTV and the level of private company involvement in development of the services. Participative pedagogies are evaluated from the perspective of social welfare and health care students and educators. The reliability of evaluation is enhanced by the fact that it is not done only by the research director, but also other involved parties. In this research the evaluation of various perspectives was done by participating private companies and the City of Espoo, a Director and Senior Lecturer at Laurea, a Laurea Masters programme student, students at the University of Jyväskylä and the research's supervising researcher. As opposed to the chapters above, the evaluation chapter is written in article form, so that the author of each section is responsible for their own section. Conclusions and development recommendations are recorded by the editors.

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6.1 The CaringTV[®] concept as an agent of service culture change

Changes in the service culture are evaluated from the point of view of both participating family care giver families and participating private companies and the City.

6.1.1 The CaringTV[®] concept as an agent of change in the service culture of family care givers

An initial mapping was conducted as part of the action research for 25 family care giver families, in 2005 and early 2006. During the project, eight family care givers stopped using CaringTV due to the death or institutionalisation of their relative or to their own state of health. At the initial stages of the project, four families were chosen to replace those who had left the project, but towards the end of the project in 2007, no new users were brought in. The final interview stage involved 21 families. One family declined to take part in the final interview due to a critical life situation. Final interviews were conducted between 10 October and 13 December 2007, with 16 taking place in the family care givers' homes and five at an earlier stage, after the families had left the project, between 18 May and 2 June 2006. In other words, final interviews were conducted with 26 family care giver families, of whom eight had either lost their care given-for relative or placed the relative in long-term institutional care. The interview topics were: 1. the family care giver family's current life situation; 2. how well the family care giver coped at home; 3. expectations/experiences of CaringTV; and 4. other matters. At the final stage there were 232 pages of transcript on family care givers. The interviews were carried out initially (2005) by students of Bachelor's degrees in Social Services, and later (2007) by two researchers. Initially there were 199 pages and in the end 232 pages of interview transcripts (1.5-spaced).

The analysis methods for family care giver interviews were narrative analysis and content analysis of the focused interviews (Tuomi & Sarajärvi 2006; Denzin & Lincoln 1998), as well as descriptive SPSS analyses. Both content analysis and narrative analysis were applied to the interviews (Polkinghorne 1988; Heikkinen 2002; Hänninen 2004). Narratives are used to structure events in relation to their position in the plot. Narrativity is related to the mutual order and relationships between events. Meaning is carried through order. The word order of sentences is significant if it affects their meaning (Polkinghorne 1988, p. 143). A personal note is contributed by the narrative tone that is characteristic of humans; this basic orientation determines what kinds of narrative models people are susceptible to use in each life situation (Hänninen 1999, p. 53). Narrative analysis was used to define the various family care givers customer relationships (cf. Chapter 6.1).

According to a narrative analysis of interviews conducted with family care givers in 2005 and 2007 (cf. Chapter 4.3), four different client narratives with varying meaning for CaringTV were identified: Active, Silent, Occasional and Transferor users. Their status as family care givers was not distinguished only according to the themes of successful family care giving, rather greater emphasis was placed on what significance the services had for them and how they participated in the production and development of the services. Below are the CaringTV client groups, which were identified, based on an analysis of the data (see Figure 9).

Active users participated in programmes on their own initiative and introduced new subject matter to them. They considered CaringTV their own and wanted to be involved in its development. They participated in all four family care giver conferences and introduced their ideas for the development of programmes and services through guidance and support service staff for the edification of other project participants. They functioned as families. The family care giver was a man or woman, and was involved in the development of services together with their spouse.

Silent users like to work on their own, but will occasionally participate in a programme. They often use personal services and want personalised guidance and service. Personal home contacts made by service providers are important to Silent users. Although they seldom participate in joint programmes, they feel that the programmes help to promote their own well-being and ability to cope. However, their lives centre around care giving and spending time at home with their spouses. They are devoted to their significant others and spare nothing of themselves to look after them. For the Silent user, CaringTV is their own personal arena for coping, in which they will participate when they can and when their significant other allows them to. The Silent user does not participate as a family, but as an individual. They withdraw into the background whenever possible, making room for others (see Figure 8).

Occasional users are active family care givers, which participate on a more occasional basis. They focus on family care giving at home, but they are often very “busy” participants, taking on several elected positions. Occasional users devote all of their free time to recreational pursuits, which invigorate them. They want CaringTV for their significant others, hoping that it will provide them with the help they need. For the Occasional user, CaringTV is also attractive in terms of family care giving skills, because it affords the opportunity to discuss things with and, particularly, listen to other family care givers. They want to hear guidance and advice, how to act and where to find support, treatment and services for their loved ones. Above all, the Occasional user sees CaringTV as a re-

source for providing security and family care giver skills. Otherwise, their lives are elsewhere.

Transferors quit active use when there was a technical malfunction or due to the death of a loved one, but wanted to keep the device for the sake of security. Their role as user changed during the project for reasons beyond their control. In most cases the reason was a sudden change in their own life situation or that of a significant other. Falling suddenly ill or being admitted to a hospital themselves interrupted family care giving, thus changing the family care giving relationship. They themselves became the person requiring care. Transferors did not necessarily quit – a number of them returned as active users after a short absence in a new life situation. For Transferors, the CaringTV network is a safety net, a place to which it is comforting to return when their life situation changes. There are familiar people in the network with whom they can talk about their changing life situations. The most remarkable thing was that, following the change, the family care giver returned to the network and was receptive to other participants. In change situations CaringTV functioned as a friend in times of mourning and use of guidance and support services in particular increased during the period of change. The feeling that “they might be with friends at home” was important during changing life situations. Transferors who did not receive support from the network during change did not want to share their changed life situation with others. They also did not feel that they derived any benefit from CaringTV during the change in their life situation and wanted to give the unnecessary device to someone else. Also, when Transferors felt that the change in their lives was liberating, they associated the technology with their earlier housebound life situation and wanted to separate themselves from what they considered unnecessary services (see Figure 8).

Also other research results promote the result that maintaining client’s social contacts with other relatives and friends and taking them out and helping the client to express his or her experiences and feelings also belong to the role of family members (Voutilainen, 2004). Gaugler et al. (2004) find out, that family members are usually content with their role as providers of social and emotional care. There is a need for improvement to allow and encourage greater involvement of family members. Involvement must be based on the assessment of individual needs and the desires of the clients and their significant others. (Voutilainen et.al. 2006.)

The family care givers of this research took care of them selves and their significant others. Also Backman (2001) have researched the self-care of over 75-year people living at home. She find out four different types of self-care: own risk,

from outside instruct, self-willed and gave up from self-care. The results of Backman (2001, 49) promote the results of this research so that Active user of CaringTV is responsible of him self and his significant other, Silent user is near the outside instruct self-care and Occasional user is like self-care. From transferors apart gave up from using CaringTV. She gave up taking care from her self to take care of her significant other. Transferors mourns for her significant other like the give uppers in Backmans (2001, 49) research, but they were not embittered, on to contrary after mourning they came back to the CaringTV –net. CaringTV gave them support during the sorrow and so empowered them to take care of them selves. In family care givers there were not those, who gave up her self-care.

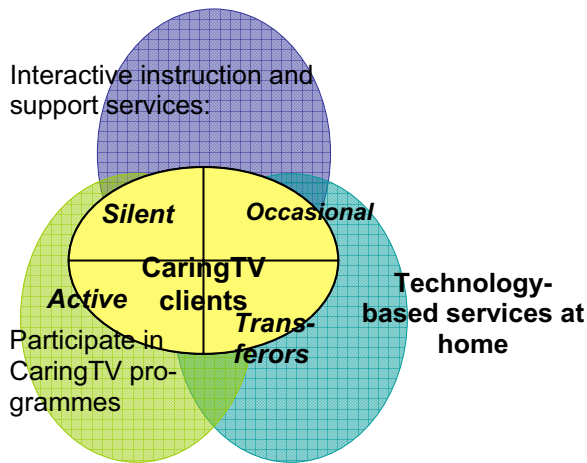


Figure 8. Client relationships in the CaringTV concept

Various services for different client groups

The client groups used various CaringTV services. Active users were involved in all the services offered by the service concept and found them very agreeable. They saw the new service as an opportunity, in which they could serve as a service developer and active participant. It was important for them that their voice was heard. Silent users want to participate, but in the background. For them CaringTV represent an opportunity for personal coping and a safeguard for family care giving, in which the significant other would not need to participate. They use personalised guidance and support services and participate more as listeners and observers in peer discussion groups (see Figure 8).

For Occasional users CaringTV is an unusual place to develop skills in family care giving. They make an effort to participate when they feel that they could work together with an otherwise strange working group and learn about family care giving-related support and care tasks together. Occasional users participate together with their significant others, making an effort to provide care for them using this resource. Participative programmes related to family care giving are of particular importance to them. They want to ensure the proper care of their loved ones with it and use physician and physiotherapist services for the promotion of their significant other's health and functional capacity.

For Transferors, CaringTV participants and services provide support during changes in the life situation. When mourning the loss of a loved one, CaringTV serves as a meeting place for the people closest to the bereaved, when they are unable to leave home and there is no one else to provide assistance. A closely knit network assists people in processing difficult emotions and strange situations.

Another Transferor group consists of family care givers who have fallen ill themselves and, therefore, cannot look after their significant others or themselves anymore. For these users, CaringTV becomes a tool for evaluating their own health and welfare as well as a social channel, when they are forced to stay at home alone while ill. CaringTV takes on a whole new meaning with the changes in life. These Transferors use CaringTV's Palvelutori, participate in the programmes and also serve as a service developer in their new situation.

Various family care giver client groups felt that the new service culture had changed their own activity, such as Active users, for whom participation in development of the service concept gave them the opportunity to learn new technologies and welfare skills. They wanted to have a say in the development of services affecting them. For them, the new service also provided a new social

peer-to-peer network, which convened every day virtually via CaringTV. According to Pyykkö et al. (2001) the elderly feel themselves lonely. In this research the elderly find out, that CaringTV can bring them social support and new peer-group. Social support has remarkable role in empowering process. It helps the elderly to find new coping strategies. (Stewart 1989.) Silent users participated by following the development of their own services, but did not participate actively in the development. For Occasional users the new service was a necessary supplement, which they kept on hand for a "rainy day". For Transferors, the new service culture added a sense of security for life changes. Access to the new service culture required learning new things in a life crisis (see Figure 9). According to other research results changing experiences between others who are in the same kind of situation has been one coping strategy to the elderly. (Gothoni 1991, Cuijpers 1996). Suitable services early enough can support family care givers well being, so that they can stay home as long as possible with their significant others. (Lyons et al. 1999) In this research family care givers want to take care of their significant other at home. Also Pyykkö et al. (2001) find out, that family care givers want to modify their life so, that they can stay at home.

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Irma Sarekoski (Based on reports of the participating private companies)

6.1.2 The CaringTV® concept in relation to changes in the service culture of private companies

This section addresses the evaluation of the execution and functionality of the CaringTV concept by private companies. The private companies participated primarily in the production of two CaringTV services: interactive guidance and support services and technology-based Palvelutori services. Lääkärikeskus-yhtymä Oy and FysioSporttis Oy were responsible for the development of the concept's guidance and support services for family care givers. MediXine Oy, IST Oy (Vivago) and the University of Jyväskylä produced technical services using CaringTV's wireless Palvelutori service. MediXine and the City of Espoo also participated in the technical development of CaringTV. The viewpoints of private companies were also evaluated by students in interviews conducted with company employees in the spring of 2006 (cf. Rainio et al. 2007).

Lääkärikeskus-Yhtymä produced the geriatrics specialist reception for CaringTV. The physician's reception was offered as a general broadcast for all users and a private reception. The service also included consultation and actual reception functions as well as interactive discussion. The service platforms were available only in the final phase, at which time blood pressure, blood glucose and sleep-wake rhythm monitoring was performed. The reception was open every other week for two-hour sessions. In 2007 there were a total of 14 reception sessions.

The project results showed that the service was a success. It would have been equivalent to a normal reception had medical records been at least partially available. Based on the service platforms, a remote screening is functioning. The large screen used for CaringTV facilitated its use, compared to a webcam. Family care giver service feedback was processed by means of a structured questionnaire and interview. Of the 16 participating family care give givers families, 7 participated in the physician's receptions. They felt that the service was necessary and easy. The average grade for the physician function was 8.6 (scale: 7–10). This successful CaringTV service trial demonstrated that, even without the physical visit to a physician's reception, it was possible to get proper medical attention, particularly in regard to the monitoring and consultation of chronic illnesses.

FysioSporttis:

FysioSporttis functioned as an expert organisation on the project. The company's professionals had produced various CaringTV programmes and guidance and support services. The new CaringTV concept had created a new opportunity as contract service provider for the City of Espoo. The content comprehended various expert lectures and exercises designed for the elderly.

Technology-based services at home:

MediXine Oy, IST Oy (Vivago) and the University of Jyväskylä produced technology-based services. The functionality of CaringTV Palvelutori services was evaluated by a total of nine family care givers, three of which measured their blood pressure, weight and blood glucose (one family care giver) and assessed their pain levels using the VAS pain scale. These measurement results were sent via Bluetooth to the Palvelutori website, which the family care giver family could visit at home on CaringTV or over the Internet with a user ID and password. The sleep-wake rhythms of family care givers were monitored using IST Oy's Vivago WristCare bracelet. The other three family care givers participated in this trial for one week.

Health Sciences students from the University of Jyväskylä researched the physical workload of family care givers. The research examined nine family care givers, whose physical workload was monitored for one day using an Armband Pro 2 monitor, as well as by recording their daily activities in a logbook. The physical performance of family care givers was also evaluated with a questionnaire (cf. Mäki et al. 2008).

Medixine estimated that Palvelutori, a communication channel and home monitoring solution designed for use with CaringTV, was realised in the project. Its realisation was based on Medixine Oy's Clinic & Monitor system. The system allowed family care givers to measure and monitor their own blood pressure, weight, blood glucose and any pain they might be experiencing. The readings were sent from the monitor wirelessly (Bluetooth) via a PC to a server, where the person's medical file is kept. The purpose of the project was to monitor the readings of family care givers and find criteria for assessing the workload of the carer's work using general instruments. Project workers and a geriatric specialist participating in the project also monitored the readings. The family care giver's care relationship was excluded as a factor from the monitoring of readings.

Palvelutori involved: a) Sending home measurements wirelessly (Bluetooth) from the monitor via the CaringTV PC to the family care giver's medical file in the server; b) Touch-screen user interface for monitoring home measurements.

The readings are displayed online to both the family care giver and the specialist; c) Stepless VAS pain measurements were taken on the touch-screen interface, using a rating scale of 1–10; d) Channel of communication between the broadcast studio and family care giver taking their measurements at home. It was not necessary to record the readings taken by family care givers – they were recorded automatically after taking them. The physician perused the readings and discussed them at the virtual reception.

The service was executed according to plan. Specification and execution of the Palvelutori service took more time than planned. Palvelutori required the simultaneous input of several companies under the coordination of project workers. Cooperation between the organisations and private companies participating in the project was good. The health care technologies used in the interactive television service, such as the transmission of home measurement readings and monitoring solutions, attracted a great deal of interest abroad, for example at trade shows attended by Medixine Oy.

Designed for use with Medixine Oy's multimodal solution, the project developed a new touch-screen user interface and VAS pain scale, which achieved renown for its ease of use. Medixine Oy owns the IPRs for its own products and the solutions it developed in the project.

The workload of family care givers was measured by the University of Jyväskylä and the resulting database was created using MetPro® software, which was used to calculate a workload profile for family care givers. This work resulted in Masters-level thesis work, which will later be used in a publication examining the work of family care givers. The results will be used in the MetPro® software database, which will facilitate the analysis of family care giver work in future applications. This work will also help establish criteria for the physical performance capacity of family care givers when evaluating their coping abilities in their work.

The goal was to include the results of sleep-wake rhythm and workload measurements on the Servicemarket (Palvelutori) website, but this plan was scrubbed due to technical and schedule constraints. Consequently, testing of the Vivago WristCare bracelet remained a discrete trial. The geriatric specialist used the sleep-wake rhythm monitoring results in her reception with two willing family care givers.

Installation of servicemarket (Palvelutori) in the participant homes required several installation, instruction and repair calls. Laurea's technical support person installed and programmed the instruments in the home's CaringTV. Some of the house calls also required the support of a Medixine technician. In addition to

this, the installations also needed remote updates by Videra. The project workers were effective at instructing the family care givers in the use of the instruments.

The technologies proved challenging for the entire duration of the project. Even though the CaringTV home measurement devices were tested in advance, a large number of problems were still encountered in the home environment. The role of technology was greater than originally assumed. Some of the family care giver families were Active users of CaringTV, who found the devices easy to use and participated regularly in programme broadcasts. They provided feedback and ideas for improvement concerning both the technology and functions. They were also willing to test the Palvelutori home measurements.

The CaringTV[®] concept in the service culture of private companies

FysioSporttis felt that the cooperation improved considerably. They hoped that the productisation phase would make commercialisation possible also where CaringTV was concerned. In cooperation the product has performed exceedingly well.

Lääkärikeskus-Yhtymä considers the trial to be a success. It demonstrated that, even without the physical visit to a doctor's office, it was possible to get proper medical attention, particularly in regard to the monitoring and consultation of chronic illnesses. An expansion of the service platform would be justified in order to obtain additional data. Additional refinement and experiences would have required a continuation of the project or the development of a follow-up project, as remote monitoring was not available until the final phase.

Medixine emphasises that the health care technologies used in the interactive television service, such as the transmission of home measurement readings and monitoring solutions, attracted a great deal of interest abroad, for example at trade shows attended by Medixine Oy. The technical goals set at the beginning of the project were achieved. It is hoped that the project will continue as a follow-up project, in which CaringTV and Palvelutori can be implemented as a home care device.

HUR was very pleased with the contacts established during the project and, indeed, one of the most important aspects was the networking of the private companies involved in the project, which has already led to several bilateral cooperative negotiations. We see an extraordinary range of possibilities in these cooperative arrangements. Furthermore, the CaringTV project has created in our company at least two clearly-defined business ideas, which may be realised as

early as 2008. In the future we will still be more than happy to participate in similar types of projects.

Working together with a large number of private companies on a joint project is challenging and takes more time than projects with smaller organisations, but it is well worth it. On the Coping at Home project the Laurea University of Applied Sciences Well Life Center's efforts in coordinating a multiorganisational project deserves praise.

In the preliminary phase, based on interviews conducted with private companies, Rainio and Rautanen (2007, pp. 41–44) formulated a Balanced Scorecard model (Pellinen 2005), which could be used to evaluate the benefits of participation for companies. They decided to present their estimate based on expertise. According to them, the estimate should be focused on ethicalness, i.e. the realisation of values. The second item to be evaluated was the development of companies involved in the project and the third performance. In this context performance refers to the family care giver's ability to cope, so that the care receiver can stay at home. Where companies are concerned, performance expresses the number of working hours used. Listening closely to the client was crucial to defining client satisfaction. The fifth item requiring evaluation is development of the company's image. According to this rating scale, the involved companies are satisfied with their participation, even though they placed emphasis on different aspects of productivity.

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Katri Lagerblom, Jaakko Valvanne, Johanna Leskelä and Anne Wiklund

6.1.3 The CaringTV® concept in relation to the City of Espoo service culture

Project execution

CaringTV was one of the City of Espoo's seven subprojects within its EEVA project (preventative elderly services). The original focus group of the CaringTV project comprehended 25 family care givers over 75 years of age and living in the Tapiola district. Some of the family care givers had signed an agreement with the City for family care giving aid. The family care giver was able to continue with the project in the event of changes to their life situation, such as when a spouse was put into long-term care or after the death of a spouse. In October of 2007 there were 15 family care giver families and two people living alone participating. Participation did not incur any costs to the family care givers.

In accordance with the tripartite agreement signed by the cooperative partners, the City of Espoo was responsible for recruiting, training and protecting the privacy of family care givers. Project workers were responsible for contacts coming from family care givers and served as their contact and support person in technical and other project-related matters.

The CaringTV project had its own steering committee, whose task was to direct and coordinate the project and ensure that the cooperation between the project actors ran smoothly. Members of the steering committee were representatives from the City of Espoo, Laurea and TDC-Song in addition to other experts. In addition to the steering committee, the project also maintained a communications unit, whose task was to draft and update a communications plan. In addition to these, a technology and content unit met during the preliminary phase of the project. There was also cooperation with the actors of the Coping at Home project. The GOING HOME project's Home Clinic for the Elderly subproject also assembled a panel of experts. When necessary, a working group at the Well Life Center (WLC), comprised of workers from both projects, were assembled to give consideration to content and cooperation issues.

Results and operational evaluation

CaringTV programmes were produced by EEVA project workers, Laurea students as well as private, public and third sector experts. A majority of the programmes produced were morning exercise shows, which were part of the action competence theme. Home safety and getting around outdoors were addressed

under the Safe security theme. Programmes related to the Family care giving skills theme were about nutrition, self-treatment and recreational possibilities. The Possibility to participate theme included discussion programmes about the past and present as well as devotional services. Regardless of the theme, all interactive CaringTV programmes promote the social participation of family care givers (Isoniemi & Niemipelto 2007).

Open discussions and private consultations with the geriatric specialist have found their way into other services, and were popular among the family care givers. From a qualitative programme offering standpoint, it is important that focus groups are offered not only the students' programmes, but also programmes produced by experts.

Family care givers were able to have one-on-one contacts with the project worker on weekdays. As of October 2007, the City of Espoo employee had logged 105 contacts, a majority of which pertained to the project and technology. There was also discussion of Espoo's services and matters related to family care giving and of a more personal nature. The conversations had been easy and natural. Family care givers were pleased to find that both the care giver and care receiver or other person living in the household could participate in the discussion. *"As if I'd asked Anne to come over,"* commented one of the family care givers in an interview.

However, the number of contacts with the guidance and support centre has been lower than initially expected, because the family care givers stayed after the programmes to talk with the project worker. Occasionally a family care giver has been instructed to call a guidance and support centre, at which point the conversation continued personally. Family care givers still continue to use the phone a great deal when dealing with project workers. This may be due to the family care giver's familiarity and confidence with the use of phones.

The CaringTV telephone directory made it possible for family care givers to contact one another. However, family care givers very rarely contact each other via the telephone directory function. After programmes, family care givers often stayed to chat with each other. This was a good way to meet and, if necessary, get peer support from others in similar life situations.

The work of project workers expanded the instruction of programme directors in using the hardware as well as in the requirements for interactive programmes. Project workers gave their feedback on production of the programme in accordance with the wishes of students and experts. The presence of the project

worker at the broadcast location was considered absolutely necessary to oversee the technical operations and ensure the smooth running of programmes.

The interactive programme required a new approach to anticipating changes to the original plan resulting from participant discussions and activity. When planning exercise programmes, consideration must be given to the fact that the leader cannot manually assist in movements or help maintain balance while on TV. The family care giver is reminded to keep their safety and physical limitations in mind. Some stumbles and one fall occurred during exercise programmes.

Beginning in June of 2007 it was possible to watch recorded programmes, which were exercise and relaxation sessions. In June 2007 interactive programmes were produced in cooperation with HOME project workers and experts. The programme was broadcast from different municipalities in turn (Lappeenranta, Lahti, Turku, Espoo).

Initially there was some doubt as to whether family care givers would be able to cope with so many different types of new trials within a short space of time, but in the end there were plenty of willing participants to be found. The family care giver focus group was popular among students working at different levels. Ensuring the focus group's privacy and ability to cope required a great deal of attentiveness on the part of project workers.

Implementation of the new CaringTV concept required more house calls for fixing technical problems than was originally planned. During the period March 2006 to October 2007, project workers made 115 house calls. Some of the house calls fixed simple problems, such as disconnected wires or loose connections, which the project workers could fix them. Modems also had to be reset often. Finding the right channel proved difficult and general instructions for different TV models were not always available. Difficult cases were taken care of by Videra and TDC-Song. It was often weeks before installation house calls could be made to fix malfunctions. Furthermore, technical support made numerous remote updates of software and hardware.

Installation of the Palvelutori service in the participant homes required several installation, instruction and repair calls. Laurea's technical support person installed and programmed the instruments in the home's CaringTV. Some of the house calls also required the support of a Medixine technician. In addition to this, the installations also needed remote updates by Videra. The project workers were effective at instructing the family care givers in the use of the instruments.

A variety of technical problems were encountered on an almost daily basis. The most serious of these problems had to do with insecure connections and sound. Due to the breaking up or echoing of sound, it was occasionally difficult to understand what was being said, especially short sentences or comments. The programme participants learned how to wait for their turn to speak and avoid talking over others. The image and sound quality in contacts made on the guidance and discussion forum were often better than on the programmes.

The use of music with state-of-the-art technologies proved challenging. The problem was that video and audio reached the homes at slightly different times, making it impossible to synchronise movements and music. The same issue was encountered, for example, in devotional services and music programmes.

Evaluation of the new service culture

Common interest in the research and development of CaringTV as well as making an impact on and changes in the welfare industry can be seen in encounters and cooperation between the public and private sectors and polytechnics. Cooperation and networking has facilitated the input of numerous different actors in the Well Life Center. The close cooperation of all project participants was a prerequisite for the production and development of the CaringTV concept. The CaringTV concept has evolved into a virtual welfare service operating environment, which brings together clients, service providers and developers. Cooperation with the third sector has also evolved. The CaringTV project made it possible to test and learn about the practical application of gerontechnology.

The technologies proved challenging for the entire duration of the project. Even though the CaringTV home measurement devices were tested in advance, a large number of problems were still encountered in the home environment. The technology should be so easy to use and reliable that it does not distract the user from its actual purpose. It was stressed to family care givers that they were involved in a development project, in which technologies would also be under development. The role of technology was greater than originally assumed.

Some of the family care giver families were Active users of CaringTV, who found the devices easy to use and participated regularly in programme broadcasts. They provided feedback and ideas for improvement concerning both the technology and functions. They were also willing to test the Palvelutori home measurements. Thanks to the input of active family care givers, the project became a client-driven enterprise.

It was noticed among Silent and Occasional users that some had forgotten how to use the devices. They were given instructions over the phone or during house

calls. In addition to the use-friendly touch-screen, the hardware required the user to learn how to use other functions. This must be kept in mind if the user has a weakened capacity for learning or remembering new things. Despite the large number of house calls, family care givers were positively disposed toward them.

CaringTV attracted media attention throughout the entire project. At the beginning of the project, many were suspicious that the service was a form of television surveillance, thus causing something of a furore in the press. Later, a news report on Finnish television channel TV1 presented the service in a more positive light. Public perceptions became more positive and CaringTV had evolved into the "flagship" of the Well Life Center. In the spring of 2007 Finnish television channel MTV3 aired a report on CaringTV on the news and morning programme Huomenta Suomi, in which the Ministry of Social Affairs and Health Permanent Secretary was interviewed. Several newspaper articles were also published. Students have done their thesis projects on CaringTV or the family care giver focus group.

Numerous presentations to visiting groups were part of the project work. Groups from various Finnish and foreign organisations have made visits to acquaint themselves with the project. Family care givers have made several presentations on CaringTV or at the Well Life Center to discuss their own experiences regarding family care giving and the project.

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6. 2 Social participation

Changing the service concept also requires changes in social participation. Developed using gerontechnology, the CaringTV concept was judged to be a technical change that would reduce human contact before it was actually begun. An estimation of social participation was made by Päivi Lehtinen, a Masters student, in her thesis work. In this case the researcher's hypothesis did not play a role in shaping the data.

Päivi Lehtinen

6.2.1 Family care giver interaction in CaringTV®

The interaction in CaringTV is media-based. Through observation Päivi Lehtinen (2007) examined the interaction of the family care giver focus group participating in the Coping at Home research in the CaringTV programme aimed at family care givers. She used observation to look at the development of interaction among family care givers as well as what items in the programme and episode initiated interaction. The focus of her observation was three programmes from the series “Palanen menneisyyttä ja nykyisyyttä” (trans. “A Piece of the Past and Present”). The episodes were retrospectives, which had the following titles: “Sumpilla”(be coffee), “Puhelinlangoilla” (by phoning) and “Rottajahdissa”. On the programmes the student held a discussion with the family care giver group for approximately one hour at Laurea’s CaringTV broadcasting centre in Otaniemi. The observation data was analysed using the Bales’ Interaction Process Analysis (IPA).

Interaction processes are analysed in an IPA. In this approach interaction is divided into units or, in Balesian terms, “acts”. In its broadest sense an “act” comprehends a complete thought. Consequently, there may be numerous complete thoughts in a single statement (Eskola 1982). I shall hereinafter use the term “act” in the sense that is, in my interpretation, meant by the participants in discussion. The Bales’ Interaction Process Analysis is a quantitative method. A quantitative method is based on systematic observation and a pre-structured, systematic classification of the data obtained (Vilkka 2005, pp. 73–74).

It has been said that in order for the IPA to work the researcher must understand the motives behind the act and interpret them. In addition to this, the researcher must have a clear understanding of the observation group culture in order for the interpretation to be accurate (Eskola 1982, p. 69). Bales describes people as demonstrating that they have understood and interpreted what the speaker means more than what the speaker is actually saying in a literal sense. IPA examines the process by which parties communicate more than the content of their message (Bales 1970, p. 68).

Bales described the observations made in an IPA as being related to the fact that, in order for the group to act effectively it must be able to solve two types of problems. One is the causation of behaviour related to the task involved: how to make progress toward achieving the task goals by the group. The other is identifying socioemotional behaviour. This means that positive feelings in the interpersonal interaction of between members of a group and forms of behaviour geared

toward promoting interaction are used in such a manner that they actually engender the group's desire to continue cooperation (Pennington 2005, pp. 37–38). Bales' one act also comprehends laughter, gestures, expressions, etc. The content of the act is further divided into twelve categories. These form the very core of the method. It is possible to group the categories into larger classifications (Eskola 1982). The categories can be classified as follows: In discussions categories 1–3 are socioemotional positive (and mixed) acts. Categories 10–12 are socioemotional negative (and mixed) acts. Categories 4–9 are task-oriented, where categories 7–9 are questions and 4–6 are attempted answers to questions. In the observation method the interaction between information givers and the researcher does not play a significant role in the success of information gathering (Tuomi, Sarajärvi 2006, p. 84). Because the family care givers were observed through a TV screen, passive observation was the only possible application. Observation in this research was open and direct (Anttila 2005, p. 190).

The divergences shown in Table 5 become apparent when examining the frequency and percentages of director and participant acts. Divergences are explained by, among others, role differences in the advancement of discussions.

Table 1 shows that the participants demonstrate their solidarity more often than the director, which is due to the fact that the family care givers form their own, familiar peer group.

Table 1. Frequencies and percentages of acts split between the director and participants in the Sumpilla, Puhelinlangoilla and Rottajahdissa programmes.

General categories	Act	Director Frequency	Dir. %	Participant Frequency	Part. %
Socioemotional Positive	Shows solidarity	3	1%	19	6%
	Shows tension release	21	9%	24	8%
	Agrees	17	8%	55	18%
Task domain Attempted answers	Gives suggestion	8	4%	14	5%
	Gives opinion	38	17%	70	23%
	Gives orientation	27	12%	104	34%
Task domain Questions	Asks for orientation	43	19%	7	2%
	Asks for opinion	50	23%	5	2%
	Asks for suggestion	15	7%	3	1%
Socioemotional Negative	Disagrees	0	0%	7	2%
	Shows tension	0	0%	0	0%
	Shows antagonism	0	0%	0	0%
Total		222	100%	308	100%

Participants show agreement in relation to acts occurring in discussions more often than the director, whose role is more to pose questions and, in turn, initiate the discussion. In their role the participants attempt far more answers in discussion than the director. There are few acts in the socioemotional negative. A few of the acts interpreted as being negative came from the care receiver, whose negativity was expressed in disagreement about something they recalled.

In order for the dialogue to function well it is crucial that everyone understand they are an equally valued member of the group, despite the differences that might exist. For the dialogue to succeed it is also important that each member feels heard and that the number and duration of speaking turns are divided equally. A chairperson or interlocutor is needed to facilitate this cooperative dialogue. Their task is to make room for opinions, bring out subjects and ensure that the discussion remains free and open (Isaacs 2000).

Discussions are directed with questions. The director's role is to bring in and engage participants, thus achieving interaction. This also gives the director the role of interlocutor. The director has the important task of continuing and transferring speaking turns from one discussion participant to another. Humour is conducive to keeping the discussion moving forward. It relieves tension and is socioemotional positive, thus making it easier for participants to take part in and continue the discussion. The director is responsible for giving each participant time, so that each one feels that they are being heard and respected in terms of the time and number of speaking turns they are given.

The interaction of CaringTV's elderly family care givers within the focus group as well as with directors is achieved socially through interaction with a media-based device. The group and family care giver peer group objective has two functions. One is the socioemotional task and the other is the task function. In the family care giver group the socioemotional function is formed in accordance with the participants' own will to create a sense of community. Another view of how groups form is linked to a psychological and social basis. The psychological basis describes the individual's goal and comprehends their desire and ability to realise their needs. The social basis indicates the group's ability to realise its needs (Niemistö 2004).

Interviews in the *Coping at Home* content report (2007) showed that family care givers had wanted to participate in the groups from their homes as well as receive support and the opportunity to talk to people in the same life situation (Piirainen & Sarekoski 2007).

Face-to-face interaction involves a larger social presence than communicating via a computer. Communicating over the two-way interface of CaringTV included reciprocal gestures, expressions, pauses in conversation and words. Although the same social rules and roles found in face-to-face interaction also presented in the media-based interaction of family care givers on CaringTV, the programmes lacked a physical presence, and the amount of non-verbal communication and suggestion conveyed was somewhat reduced due to, among other things, the technical properties of the screen and the small size of the participants on it. This, however, does not diminish its importance in allowing family care givers to meet with each other and the director on TV in real time. Furthermore, the participants can remain after the programme to chat with each other privately.

During family care giver group discussions the speakers often sought to achieve mutual understanding and enjoyment over its course. As the discussion went on,

the first part of an adjacency pair sets the terms for a certain type of response. The most commonly encountered adjacency pairs in discussions are questions and answers. Discussions establish a mutual understanding in this manner. Mutual support and engaging in discussions on the programme by family care givers was observed as a task function in these CaringTV programmes.

The Coping at Home content report showed that family care givers expected CaringTV to provide them with the opportunity to meet other people as well as information and advice for their daily lives. Cooperation among family care givers was also considered to have a therapeutic effect. Family care givers felt that discussing problems and life helped them to cope (Piiirainen & Sarekoski 2007).

The results of this development assignment supports the development of CaringTV's programme offering. The programme needs a director who inspires elderly people to take part in discussions. Finding subject matter of interest to the elderly is also important in the programme offering. For example, memories of commonly experienced events in the course of their lives inspired lively discussions. In social intercourse humour was used to alleviate tension and a pleasant, enjoyable atmosphere was conducive to interaction. Humour and ensuring that the family care givers were comfortable in social intercourse was one of the challenges facing the director in CaringTV programmes.

The fact that this research compiled data related to the support of elderly health and functional capacity demonstrates its usefulness. Theoretical data on interaction, groups and group direction is also included in this work. The welfare industry-related data on media-based interaction compiled in this research can be used in the planning of various interactive programmes for the elderly as well as other groups.

The opportunity for meeting others provided by CaringTV rejuvenated and invigorated the family care givers participating in the peer group. The functional social relationships were considered to significantly promote health and functional capacity. The elderly often have shrinking social circles and are not able to meet others or new people as often as they did during their working years. Maintaining contact with other people is also a self-initiated desire, which is affected by a wide variety of things.

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6. 3 Participative pedagogics

Pedagogically, production of the new CaringTV concept also required learning and changing competence. The service concept included the production of participative CaringTV programmes together with family care givers. Students and educators from the Laurea University of Applied Sciences were committed to the development of a new service for elderly family care givers. Programme production was part of the curriculum for Health Care and Social Welfare Education students. The students produced 314 different programmes. The student's performance was evaluated by Senior Lecturer Päivi Immonen-Orpana, who is completing her dissertation on this subject. Educators were responsible for the pedagogical activities of students. The CaringTV concept was also a new type of service in the field of health care and social welfare for them. In the next section Director of Higher education Katariina Raji examines pedagogical changes in the educators based on the results of a survey conducted.

6.3.1 Physiotherapist student perceptions of the learning process

In the Autumn of 2006 advanced physiotherapist students (N=22) took the “Physiotherapy of Elderly People” research unit under the Coping at Home research project’s interactive CaringTV programme production. The research unit was worth 1.5 credits. *The goal of the research unit was for the student to learn about typical geriatric illnesses, their prevention and rehabilitation. Students receive instruction in therapy planning, implementation and evaluation* (Laurea University of Applied Sciences 2004).

The target of this research was also to support students’ research and development competencies and reflective competencies. These are apart of experts’ metacognitions. After that we discussed and agreed the way how to be apart of Coping at Home –research project. The starting point for the plans of CaringTV programmes were the family care givers expectations from the TV programmes. The students learn the successful ageing –model (Piirainen ym. 2007). The students were also instructed to discuss about the needs and expectations of the family care givers and think about ideas according to physiotherapy. How they can support the elderly family care givers’ well being related to the expectations. The students’ were instructed to think about the possibilities of physiotherapy so wide, that they can answer to each theme of family care givers expectations. The ideas of students are classified according to the family care givers expectations groups.

The students’ made ten small group according to their own interests. After that each small group made research problem or research question for program plans. The intention was to provide support for small groups of students (10 groups) in critical self-evaluation of their own performance and the drawing of systematic conclusions in problem-solving processes. Heuristic is a common model, which symbolic and approximately show the conclusions structure of problem solving. Gow has developed the original Vee – diagram or Vee heuristic (Nowk 1990, 1998, Novak & Gowin 1995, 63-86). According to Åhlberg (1997, 285–290), going through the phases of Vee heuristic would more likely promote learning to learn, increasing understanding through one’s own learning and possibilities to more effectively manage one’s own learning and life. Åhlberg have systematic developed the Vee heuristic (1993, 1998, 2004ab, 2005, 2006). The enhanced phases and questions of Åhlberg’s Vee heuristic are described as followed figure 1.

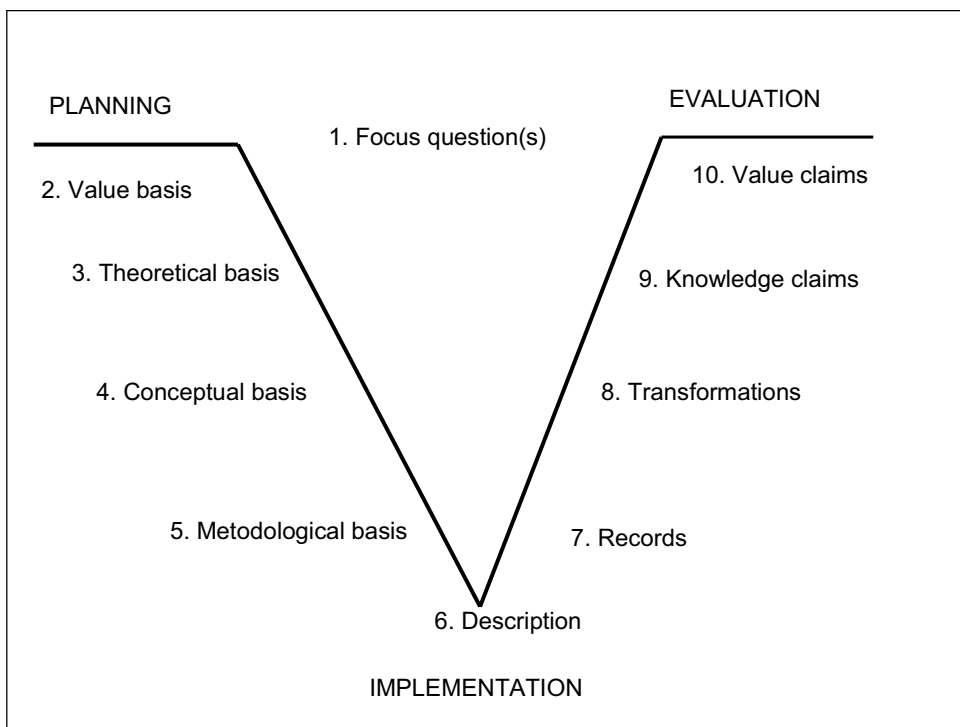


Figure 1. The enhanced Vee heuristic of Ahlberg's

The students have possibilities to have instruction to the data gathering and program planning according the curriculum (Laurea 2004). The timetable was tight. The purpose was that the research plan is ready after one week. The CaringTV programmes and research theme of students are seen in the following table 1. The CaringTV programmes went out in weeks 37-43. Every week went out 5-6 small groups' programmes. The teacher instructs every programme and follows up at least one live broadcast per each small group and evaluates the written plan and live broadcast. The Espoo city employees evaluate the second live broadcast. The Espoo city employees were the contact persons to the family care givers in this research and so they were responsible of the studio work.

Table 1. Essays themes, contents and small groups

Family care givers' theme	Students theme/ /content of a programme	Small group number
1. Action competence	Functional capacity	7
(Can act)	(ADL =Activities of Daily Living)	3
	Power	6, 9
	Endurance	4
2. Welfare	Nutriment	8
	Relaxation	1, 2
	Creativity / music, danse	5
3. Possibility to participate	Participative way to implement	All groups
4. Safe	Balance	7, 10

The students made self-evaluation of their own learning and problem solving by Vee heuristics. Beside this the students subjective constructions about successful ageing and the change of it during the study unit and after common knowledge creation were surveyed. The change of conceptions has written in other publication. (Immonen-Orpana 2007, Immonen-Orpana & Åhlberg 2008a, 2008b/ unpublished manuscript).

The students describe their learning and problem solving processes by Vee heuristics as following:

1. Focus question: What am I researching? (asked as a simple question; put and/or approved in one's own words). The students felt that the themes of learning were well being (nine students) and "functional capacity" (eleven students) were the most important in terms of their learning. Six students chose the security theme and, in addition to these, three students chose the Activities of Daily Living (ADL) as a second theme. The students stayed within the confines of their selected focus questions (first phase of the Vee diagram). For example: Does music exercise have an impact on the well-being of the elderly? Can balance exercises affect ADL? The students also linked their questions primarily to areas of expertise in physiotherapy and functional capacity. For example, balance, strength and endurance were, to a certain extent, the theme in six small groups and relaxation in two groups. One group focused on nutrition and exercise. The theme in one group was non-verbal expressiveness.

2. Value basis: Why do I want to spend my life, time and resources to answer the focus questions? Two small groups considered the importance of the study unit (Value basis) integral to the curriculum and mandatory. They described the value basis of the task as follows:

"This is a course of study" and

"it is part of the curriculum".

One small group felt that the studies are indeed part of the curriculum, but it also underscored the importance of deepening one's own knowledge. The other seven groups explained the importance of the issue and subject matter in terms of society and the development of their own expertise:

"Balance is vital to coping at home – it prevents the risk of falling"

"We wanted to create an opportunity for recreation and give family care givers some time for themselves in their work-filled day"

"Interest in the subject and application of the knowledge in the workplace"

3. Theoretical basis: What is my tentative theory in the beginning of my inquiry? What do I know at the beginning of my inquiry? Students described the task both in terms of experiential data and previously acquired theoretical knowledge. They explained the importance of their chosen theme, but also admitted to lacking knowledge on how to apply the knowledge for the elderly.

4. The Conceptual basis: What are the main concepts of my theoretical basis that that helped in creating new knowledge? The Conceptual basis applied in some cases to the successful aging concept content of student groups and some simply to the theme of the television programme.

5. Methodological basis: “What methods do I plan to use to answer my focus question(s)?” When describing the Methodological basis — of the task, all the groups mentioned the Internet or online databases.

6. Description of knowledge acquisition: What did I have to do, to answer my focus question(s)? The students described their examination of source data, going through the material and assessing the accuracy of the data.

“We got evidence based information mostly from sanitary gate’s articles”

“We have to find out accuracy source of information, get acquainted to sources, to process data, produce written rapport.”

7. Records, quality of data: “What kind of data did I actually succeed in acquiring? The small student groups stated that the real data they were able to acquire was comprised of books and research articles. The students tried to find out evidence based data, but in some theme there was data and other there was not.

“ We find common knowledge about relaxation, but not evidence based knowledge just for the relaxation for the elderly.”

“We got evidence based information about how power training is functioning also in the elderly, mostly from sanitary gate’s articles and research results ”

8. Transformations: How did I arrive at my knowledge claims and, on the other, my actual learning process? In describing their conclusions, one group said that their conclusion was based on experience; another said it made use of all the data it had acquired; the third and fifth groups gleaned information from the research results published in research articles; the fourth group arrived at its conclusions using key concepts; the fifth and ninth group had come up with preliminary task hypotheses or claims, based on which they delimited the acquired data. The sixth, seventh and eight groups drew general conclusions from the written material for practice by the elderly.

9. Knowledge claims: What were the main truthful conclusions in the learning process that I constructed out of the data?. According to these future experts in welfare, producing television programmes increased the data researched (by the seventh group), but the third group felt that the volume of data was either not in-

creased or superficial in nature. One group felt that simply searching for information supported the learning process.

10. Value claims: How worthwhile are, on one hand, the new knowledge claims and, on the other, my actual learning process? The students acquired researched data on the welfare of the elderly, which changed their value arguments in a direction that took the elderly into consideration, respected them and took responsibility for them. The students saw the activity as a new type of learning opportunity; the process was interesting and educational to the students, and it showed them how to examine and identify the importance of researched data and value data. One small student group described the importance of this new tool as follows:

“... because there was new and researched data, the learning process was different than in other courses, as the plan we came up with was done on TV”

In addition to the previously learned and researched scientific data, there was also value data, which broadened their skills and changed their perceptions concerning the promotion of elderly people's functional capacity. One small student group described their learning as follows:

“The endurance exercise wasn't as important to the elderly as the strength exercise, but it was still useful to learn how to direct it”

Educator's perspective

It can be stated that the goal of the 2004 curriculum – competence in scientific knowledge and professional skills – was achieved. All students in the group participated in the rehabilitation of the elderly through CaringTV, planned its execution based on researched data and evaluated both its performance and their own learning. Each student group learned something, some groups more than others. Use of the Vee heuristics and the data these provided was extremely encouraging. Going through the phases of the Vee heuristic revealed the difficulties that the small student groups had with describing and understanding their own conclusions in problem-solving processes. Some of the students' reasoning was based on their own experience, some on the results and conclusions of research articles, whereas others were unable to define their conclusions. The data obtained from Vee heuristics showed that although the students had strong information retrieval skills, they had difficulties describing or explaining how the information they found could be utilised in the development of their own field. Learning in the Coping at Home research project provided the students with new knowledge and skills and gave them the opportunity to employ existing knowledge in new situations; there was a deepening of skills. It also produced value

data, in which the elderly were seen as being worthy of respect and value. Car-ingTV was considered a challenging and interesting learning environment.

The goals of reflective components were achieved in many cases thanks to the use of Vee heuristics. The educators were left with a strong sense that the learning group was able to: assess their own skills and specify areas needing development; identify their own learning approach; participate in independent learning and the development of learning approaches; learn together and share knowledge with others in a work group; deal with changes and identify different learning and action possibilities; and plan, organise and develop their own operating approaches. The new Learning by Developing (LbD) research project was also an educational and challenging experience for the educators.

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6.3.2. The Coping at Home research project from the educator's perspective

In the Coping at Home research educators participated in programme production for CaringTV. According to the project records, a total of 14 educators from the Laurea University of Applied Sciences participated in the project. The educators evaluated the participation in CaringTV programmes, which was examined in an email survey sent to them on 19–21 January 2007. The unstructured survey was sent out via email to 14 of the Laurea educators who participated in programme production or as thesis advisors. The survey was completed by 13 of the 14 educators (response rate: 93%). The educators taught in the degree programmes for nursing, social welfare and physiotherapy. Three of the respondents had only served as thesis advisors and the remaining ten participated in the production of CaringTV programmes with the students as part of their instruction. Only the responses of educators who participated in the production of CaringTV programmes are shown here. Written responses were analysed using a content analysis method (Silverman 2005, Denzin & Lincoln 2003).

According to an analysis of the responses, programme production was done in all phases of the students' studies, from the introductory phase all the way through to elective and advanced studies. At the advanced studies level, the students also did thesis work on the CaringTV service concept. According to a classification of the responses, the CaringTV programme content comprehended elderly security, occupational welfare, client work, instruction and guidance, nursing, family giving, home care, medication, physiotherapy, creative activities, research and development.

A content analysis of the responses to questions about what use the Coping at Home project had for instruction and how the production of CaringTV programmes changed the nature of instruction showed that the Coping at Home research project added a new dimension to teaching by offering an authentic learning environment where it was possible to meet real clients. It facilitated the development of skills in using technology to develop welfare services and provided an opportunity to deal with students as motivated and responsible partners. It offers new alternatives, enhancing cooperation and making it possible to participate in the creation of new skills. However, not all the educators participating in the project felt that they had derived any benefit from CaringTV (see Table 1).

Table 1. Changes in instruction with CaringTV

Content classification	Actual quote
A new dimension to instruction, where it is possible to meet real clients	<i>It added one new dimension to teaching methods and gave the students an opportunity to try a new technology.(ed2)</i>
Development of educator skills in applying technologies and developing welfare services	<i>- development of welfare technology skills - changing the tradition role of teacher (ed3) Learning the technology as well as the “jargon” through remote instruction is interesting, but it required training on its own. (ed5)</i>
Students motivated and responsible partners	<i>Diversified learning methods. I learned that students come up with ideas for their subjects and do their assigned work without needing me there to supervise every step of the way.(ed8)</i>
New alternatives	<i>the problem of remote instruction, the changing of one’s own area of expertise into something else – to be present somewhere new? (ed5)</i>
More cooperation	<i>development of cooperation across organisational boundaries (ed3,)</i>
Research challenge	<i>I would’ve liked to see more educator cooperation on the research end of things.(ed9)</i>
Participation in the development of new skills	<i>Learning the technology as well as the “jargon” through remote instruction is interesting, but it required training on its own. (ed5)</i>
Not useful to instruction	<i>CTV wasn’t really of any benefit to my teaching (ed9)</i>

A content analysis of the responses to the question about what skills the respondent felt CaringTV provided the students showed that it is a new challenge in human interaction and an opportunity to participate in genuine service production and its development. The CaringTV service concept is a new investigative operating model as well as a model for creating constructive data, thus making it a new approach to working in cooperation with colleagues and students for the development of new skills and confidence (see Table 2).

Table 2. Skills provided to students by CaringTV as evaluated by educators

Content classification	Actual quote
Challenge in meeting people	<i>"The students have done extremely well in getting to know "the elderly" (and the subjects that interest them), which might otherwise be left out" (ed5)</i>
Participation in genuine service production and its development	<i>"The students have been given an opportunity to use this new directing tool and practice direction with actual clients." (ed9)</i>
New investigative operating model	<i>"understanding the planning of data collection and the difficulties and alternatives encountered in it" - if the curriculum had allowed it, there would've been a possibility to go through health promotion theory (health education models and theories)(ed1)</i>
Creation of a constructive data model	<i>"it would've provided a viewpoint on projectised instruction – a constructive viewpoint." (ed4)</i>
A new way of working in cooperation with colleagues and students	<i>"the development of cooperation across organisational boundaries" "Working in a group ... Our own direction, Direction from others, perception of age changed"(ed3),</i>
Development of skills	<i>"scientific knowledge and professional skill, reflective-ethical and globalised expertise" (ed4)</i>
Development a new kind of confidence	<i>"putting yourself out there", "on live TV", experience that all fields of study can be "in the same project" (aging affects us all!), planning and taking responsibility" (ed5)</i>

According to nearly all the educators, the students learned the content of the subject matter being taught, data acquisition skills, responsibility and planning, cooperative skills, new group and individual direction approaches, and interaction skills. In comparing the results to earlier studies on nursing students' attitudes toward the elderly and perceptions of geriatric work in Finland, it can surmised that the CaringTV concept created new opportunities for students to change their attitudes toward the elderly in a more positive direction. An earlier research (Hirvonen et al. 2004) showed that the attitudes of social welfare and health care students towards the elderly had become slightly more negative during course of the programme, which affected the choices they made in such a

way that they did not wish to continue their geriatrics studies further. Hirvonen et al. (2004) also stated that other studies supported their findings. This negative shift in attitudes was absorbed during guided exercises and on-the-job learning. The students felt that educator support and the practical application of theoretical instruction preceding practice were important (Fagerberg et al. 2000; Koskinen & Silen-Lipponen 2001). Indeed, Hirvonen et al. (2004) found that joint development projects help to reform both the workplace and education. According to this research, the students related to the elderly in a challenging new way and also chose to continue on to advanced geriatrics studies and thesis work.

Table 3. Skills provided to students by CaringTV as evaluated by educators

Content classification	Actual quote
Substance-specific skills	<i>Made me think about the essence of or criteria for what is, for me, a "new" substance group. The presence of the TV in the house has made it easier to find the implementing group (ed5)</i> <i>"Development of the work and the work group" (ed6)</i>
Skills in interacting with the elderly	<i>"it was extremely educational for a social services students to also meet the "elderly" (it was a real eye-opener) (ed5)</i> <i>"Under the direction of others, my perception of aging changed." (ed3)</i>
Presentation skills	<i>"Students were able to learn group direction; confidence in making presentations" skills (ed2)</i>
Reflective, ethical and global	<i>"scientific knowledge and professional skill, reflective-ethical and globalised expertise" (ed4)</i>
Skills in creating new information	<i>"my own area of expertise changed into something new" (ed5)</i>
Skills in new direction approaches	<i>"The students have been given an opportunity to use this new directing tool and practice direction with actual clients." (ed9)</i>
Creating a new kind of work culture and skills to function within it	<i>"Rethinking the implementation plan of units and section content with the students, considering overlaps together with colleagues, motivating the students" (ed7)</i>
Skills in performance responsibility	<i>"it would've provided a viewpoint on projectised instruction – a constructive viewpoint." (ed4)</i>

Thus, the question is: What skills have been created by CaringTV and its programmes? According to the educators, CaringTV produced substance-specific

skills, skills in interacting with the elderly and presentation skills. In broader terms it produced reflective, ethical and globalised skills and created a new kind of work culture and skills to function within it. It also produced skills in creating information, new approaches to direction and performance responsibility (see Table 3).

The educators had a wide range of thoughts concerning the question “How would you develop CaringTV?” According to a content analysis of the responses, three main development themes and five different sub-themes were identified: the educators had doubts concerning the CaringTV technology. The educators found the development of their own media skills and those of the students in a television environment as well as providing direction for the students as equal partners to be challenges. In developing the educator’s own work organisation the challenge lied in integrating the CaringTV research and development project in the curriculum and their own work planning and organisation, as their learning environment is a research and development project (see Table 4).

Table 4. Development of the CaringTV concept from the educators’ perspective

Main theme	Content classification	Actual quote
Development of technology	CaringTV technology	<i>“Make the technology work, so the time used for broadcasting a programme can be spent on the broadcast.” (ed3)</i>
Direction skills	Media skills/ TV as an environment	<i>“Give the educators more training in the special features of this technology.” (ed2)</i>
	Providing direction for the students as equal partners	<i>“Our students are not very well equipped for group direction, much less this. (ed2)</i>
Organisation of educator’s work	Integration of the CaringTV research and development project in the curriculum	<i>“Earlier planning in relation to the various curriculum terms, plans and execution, and recording evaluations on-time and in coordination.” (ed1)</i>
	Planning and organisation of own work, as the learning environment is an R&D project	<i>“The evaluation criteria should be at least partly structured.” (ed1)</i>

The Coping at Home research was carried out partly during the implementation of Laurea's new Learning by Developing operating model. The research began in the autumn of 2005 and the new Learning by Developing operating model was implemented in the autumn of 2006. When comparing the results obtained with Laurea's Learning by Developing (LbD) operating model (Raij 2007), it can be seen that the educators participating in the production of programmes for CaringTV confirmed the verification of the main prerequisites for the LbD operating model as a new dimension for educator work. The main prerequisites identified in the model – Authenticity, Partnership, Creativity, Experiencing and Investigative approach – can be seen as a new dimension in the educator's work and an opportunity to function as a partner to the student and colleague in a genuine environment where they can interact with a genuine client. Cooperating on development efforts requires an investigative approach and facilitates the creation of new knowledge through creativity. A new kind of confidence can also be seen as confidence in the significance of the colleagues' and partner students' own experiential knowledge.

When comparing the acquired skills with Laurea's skills-based curriculum, it can be seen that the jointly-specified general skills – ethical, reflective, network, globalisation and innovation – also develop along with the CaringTV programme production. Likewise, substance-specific scientific knowledge and professional skills are attainable in the learning environment being presented. Consequently, the views of educators compiled confirm the possibilities for developing a new kind of instruction referred to in the LbD operating model and also confirm that the competence goals set in the jointly developed Laurea student curriculum can be achieved in a real research and development project. As is evident based on the views of the educators above, the Coping at Home research and development programme has also provided a crucial environment as the developer of a new kind of expertise.

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7 Conclusions and development recommendations

The innovation aspect of the Coping at Home research project played a central role in the motivation and desire of all actors to develop their operations extensively and systematically in relation to the goals set for projects. Simply wanting something, however, will not achieve progress, rather all involved parties must also possess the ability to identify and visualise new challenges as well as the ability to find the necessary resources and expertise in the research and development of processes related to the promotion and maintenance of elderly welfare. This was the project challenge, as any new project is a leap into the unknown, where the meaning of cooperation and group cohesion is emphasised. Group cohesion refers to the desire of a group's members, or project participants, to stay and work in a group. The more the participants want to stay in the group, the more likely they are to commit to its goals. Ideally cooperation can enrich the conducting of research, as the thoughts, views and support of other researchers can actually be very conducive to the research itself, when research and development work is focused on the right functions that advance the project (Jokinen & Juhila 2002, pp. 109–118).

Research triangulation as the creator of innovation

Triangulation is an analysis method which uses two known variables to determine a third, unknown variable. According to Tuomi & Sarajärvi (2006, 141–142), triangulation is the combined use of different methods, researchers, data sources or theories in research. As triangulation combines several methods and approaches, it involves multiple perspectives or paradigms. Indeed, triangulation can be used to enhance the reliability of the research. The different research methods or perspectives used by researchers can result in a situation where research results applying to the same phenomenon can be simultaneously valid and contradict one another.

In triangulation Denzin (1978) and Tuomi & Sarajärvi (2006, 141) make the following distinctions: data triangulation, which is the use of several different sources of data in a single research project, such as the family care giver interviews, theme papers written by educator and private company participants, worker interviews and the results of student Vee heuristics in this research. In researcher triangulation, such as used in the Coping at Home project, several researchers research the same phenomenon and are involved in either part of the research or the entire research process. In theory triangulation several theoretical perspectives in the interpretation of research data are used, such as, in this research, a good life, successful aging and theories of value chain transitions. In method triangulation several data collection methods are used to obtain research data (Eskola & Suoranta 1998, 69 – 70), such as the surveys, prepared tests and interviews used in this research.

There were 12 parties and a total of 32 different actors working in partnership in the research project. The basis of partnership is the high level of expertise possessed by the parties, the mutual value added that partnerships brings and trust between the parties. This trust is initially formed between people working in a company and, over time, evolves into a trust between different companies. Partnership involves the commitment of the organisation as a whole and each stakeholder to long-term, close cooperation in order to achieve common goals and the resulting value added. Partnership is not just a relationship formed under contract, but a state of being that forms over time, an approach to working based on confidentiality and openness. Partnership is a conscious strategic choice (Suomen kuntaliitto 2005, 4 – 5).

Partnership involves a cooperative relationship, an operating approach in which the various parties share common goals, operations are constantly improved, knowledge capital and learning grow, the level of trust increases and value added is accrued as a product of teamwork. In partnership all parties go through the moments of truth, emotions, experiences and facts encountered in a research project as well as the concrete cooperation and experiences with operating methods and the evaluation of results.

Partnership phases in the Coping at Home research project

In the Coping at Home research project the analysis of focus group interviews conducted at discussion meetings showed the presentation of Argote & McGrath's (1993) group formation core processes, in which each group forma-

tion phase has its own typical development task related to the task performance and socioemotional interaction. In the first phase of group formation, or “**forming**”, ideas and plans as well as common goals and values must be developed. In this research the entire actor group committed to development at a discussion meeting held on 6 February 2006.

The actor group had reached Argote & McGrath’s (1993) second phase, or “**storming**”, in **May of 2006**. At this time, agreement was reached concerning goals and values, while some of the family care giver families decided to pull out of the project. The research group reached the third phase, “norming”, in November of 2006, when the challenges encountered during task performance were examined and the norms, roles and delegation of responsibilities guiding the work were established. The research entered another action research cycle.

In the fourth and last group formation phase, its members should already be able to execute the task (performing) and, for this purpose, the group’s members must maintain a certain level of cohesion and solidarity. The actor group reached this last phase in March of 2007, at which time its activities were oriented toward the testing of the service concept.

In addition to the group formation phases, other perspectives related to the group lifecycle affect how the work group’s functioning and efficiency change temporally. Four work group temporal change perspectives are basically represented by four core processes, which describe mutually related and repeated action chains, from which the work group’s development is formed (Argote & McGrath 1993).

The core processes describing work group changes over time are building processes, which comprehends the formation and development of the group as a sociotechnical system and contain both interaction and task performance related factors. Action processes describe the group’s task performance, reformation processes refer to changes following the group’s own developmental and task performance-related experiences, and external relations processes refer to the group’s development resulting from changes to its principals and environment (McGrath & O’Connor 1996).

Lindström et al. (2003), in a study on Finnish work groups, divided them into developed and undeveloped groups, according to the core processes of temporal changes. The results showed that members of developed groups felt that the group’s work comprised a sensible work entity. Official team thinking had entered the picture. The “we” idea had begun to take hold, and the group began to feel cohesive. In these groups mutual responsibility and independence was ad-

vanced, and work was done flexibly and across occupational boundaries. Constant general conversation about work, a daily analysis of members' work, and the elimination and resolution of friction were typical of these groups. Short general work meetings were held frequently. Confidence in the development of personal opinions had been increasing all the time. These groups usually had fun together. According to the Coping at Home research results, Active CaringTV users functioned in the manner of a developed group.

At the outset of the Coping at Home research project group formation and partnership, with its various phases of development, initially followed Ståhle (2000) at the operative level, which demonstrated that at first partnerships could not be advantaged openly, small orders were made, each member had their own needs in relation to the project's goals, and the cooperative link was not optimal. Naturally, this approach did not produce beneficial value added for the research projects. The exchange of information and level of trust between members was minimal. Over time, partnership became tactical, where each member's skills were already integrated and advantaged as well as learned from others. The level of trust increased. As the project progressed, it was possible to see the actor meetings leaning toward development and innovation. The members noticed that they had gained a strategic advantage, where the correlations became vital and meaningful and member roles complemented one another. The generation of value added could be observed (see Figure 1). Methods proliferated. The actors in this phase lived in strategic partnership, where the operating environment is dynamic and, according to Ståhle (2002), in this type of environment chaos is absolutely necessary for growth in development and new skills.

According to Ståhle (2002), in order for the research project to progress toward its goals and to initiate the restructuring and re-imaging companies, chaos and imbalance are needed in familiar, daily operations and competences. Chaos occurs for two reasons: the abundance and variety of information, which occurred a great deal in the project. This means that the entire operation requires a great deal of spontaneity, openness, information exchange, and an investigative, developing approach in order for it to establish itself. The exchange of information should be sufficiently spontaneous, because the more freedom there is in it, the more chaos it will be able to create. Although innovations cannot be predicted or controlled, a certain amount of influence can still be brought to bear on them. In other words, it is possible to create the conditions in which innovations are more likely to occur than otherwise.

Generating value added

(Adapted from Ståhle 2000)

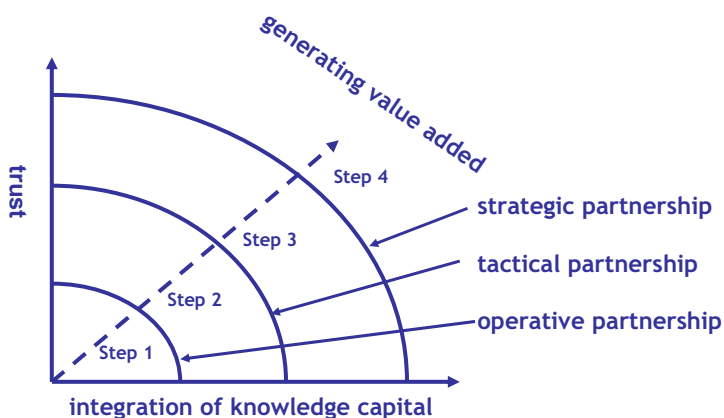


Figure 1. Generating value added in the Coping at Home research

The more chaos that is allowed to flourish during the project, the greater the chances for innovations, or vice versa. In the absence of chaos changes are few and far between or completely non-existent in the research and development of processes related to the promotion and maintenance of elderly welfare. According to Ståhle (2002), chaos organises itself, which is the core of innovation. The intellectual disorder created in the Coping at Home project took on a whole new form in November 2006. The research entered its second phase and produced new expertise and learning results which stemmed from developmental learning; a desired change for the family care givers, in which space was given to allow things to find their own form through discussion in order to achieve successful family care giving and identify the CaringTV participants.

Benefits of partnership and cohesion

Over its two-year period, the various project participants met at management group meetings 6 times, at discussion meetings 4 times, at partner meetings 32

times and at other planning and development meetings 45 times. How, then, was it possible for a partnership of 12 parties to work with 32 different actors? What achieved the project group's cohesion? What benefit was derived from partnership?

According to the Association of Finnish Local and Regional Authorities (Suomen kuntaliitto, 2005, 4–5), a characteristic of partnership is the "win-win" principle, i.e. all parties benefit from all the work performed. In addition to providing the principal cost benefits, partnerships generate, among other things, an increase in actor expertise and development as the bearer of overall responsibility for planning. Seen from a service provider perspective, achieving steady demand was essential to creating opportunities for the long-term development of a service. These affect the preservation of competitiveness in the future. A key aspect of cooperation in partnership is product development, which demonstrates an especially functional relationship between partners.

The basis for execution of the Coping at Home project was that the actor group be multidisciplinary and its participants be comprised of experts from different clusters. When actors from different fields networked and combined their expertise and operations in Coping at Home cooperative projects, a dynamic operating environment was formed. It was rife with possibilities, which a single actor would not have been able to realise on its own when working in stable business processes in a potentially closed innovation system. This multidisciplinary group of actors consolidated the core competences of various fields from various clusters, thus offering the project participants new opportunities. This eventually blurred the boundaries of actors working in strategic partnership and their mutual networking capabilities were stimulated, information was shared and the level of trust increased. According to Chesbrough (2004), the companies no longer strived for permanence or to keep expertise and benefits to themselves. The companies no longer existed in a closed innovation system, which limits the use of acquired data to only within the company.

THREE BASIC TYPES OF VALUE NETWORKS

(Adapted from Möller et al. 2004)

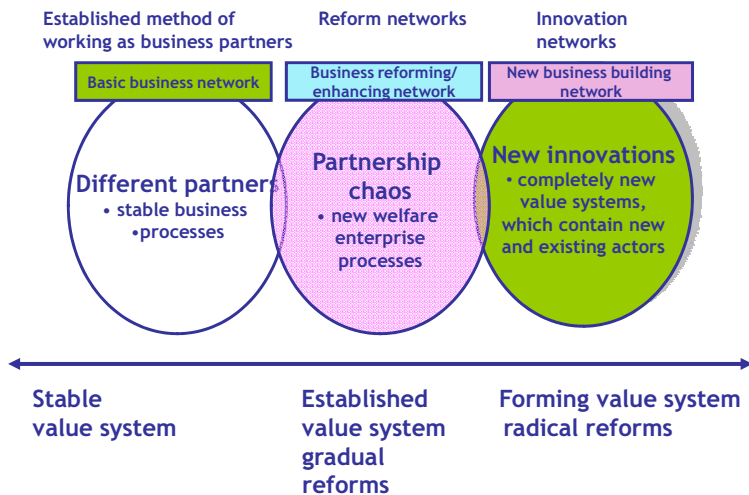


Figure 2. Reforming actor business by altering value networks

Working in partnership allowed for the realisation of open innovation during the project, by taking advantage of expertise outside the organisation, which injected value added into its own daily operating processes. Information was also shared and the internal company information that should be outsourced was identified. At the same time, it became possible to reform actor businesses as proposed by Möller et al. (2004), which involved the use of networking and new partnerships to transition from established operating methods to an open innovation system, where innovations were identified and then further developed and distributed. The most important goal of partnership is the creation of value, wherein each partner, a link in the value chain, increases the value of the network as a whole (see Figure 2). In this project a stable value system was used to work for the good of people, which was achieved by restructuring the value system and being highly attuned to innovation.

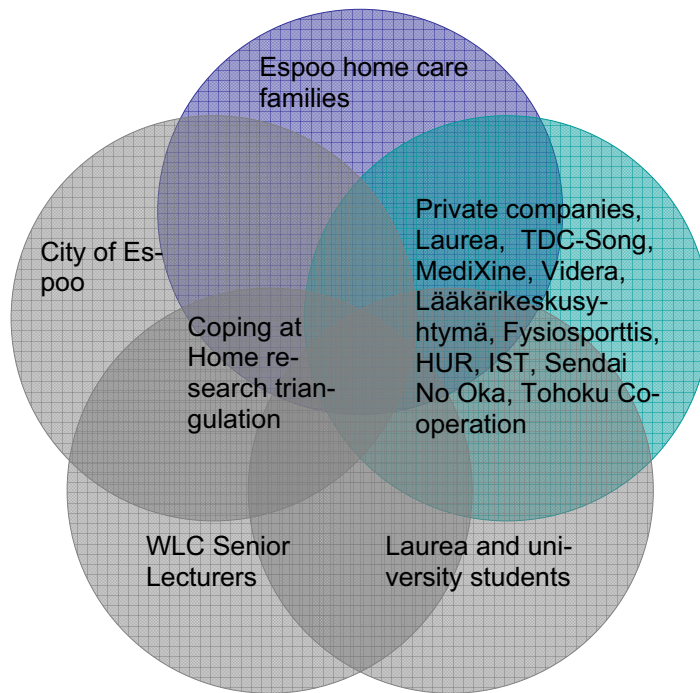


Figure 3. Participant cooperation in research triangulation

The key participant in the new innovation produced as a triangulation is the family care giver family, based on whom, with whom and for whom the entire Car-ingTV concept was produced. Other actors in the project were the City of Espoo, which is where the participating family care givers live. Espoo also developed its own services for the elderly. The third invaluable participant was comprised of private companies, which created new technologies and shaped their services and products to make them suitable for the purposes involved. The fourth par-

ticipant was comprised of social welfare and health care professionals. The research project was part of their professional development. The fifth participant was represented by Laurea University of Applied Sciences Well Life Center Senior Lecturers, who provided instruction and guidance for future professionals in their educational development. The sixth participant was comprised of researchers, who worked together with the participants to analyse and conceptualise the research as well as introduce into the national and international dialogue (see Figure 3). International research cooperation was realised under the auspices of the Active project together with the Tohoku Fukushi University. During the research project, three joint Sendai-Finland seminars were held, whose two publications reported research results, which were discussed during presentations (Piirainen et al. 2006, Rajj et al. 2008).

Conclusions for the CaringTV[®] concept

The Coping at Home research has produced and evaluated the elderly family care give-driven produced a high-tech welfare technology-based product, the functioning of CaringTV. The change of service culture demanded a change also the action of citizens in the area. The participating family care giver families developed actively their own welfare. According the results of the research there are four kind of family care giver users of CaringTV. The different actors different possibilities to take apart this project were taken in account to use new technological innovation, when they can themselves develop it. Coping at Home research and development produce also pedagogical know-how to all participants. The win-win situation, where the developing of CaringTV in integrated Well Life Center learning environment create a new space, where different actors can acting together produce services so that they can support each others.

New product showed to improve double-sided interaction and home living family care givers families' welfare. (see Lehtinen 2007). To the future experts in welfare, the students of university of applied science, CaringTV showed to be interested and challenged learning place, where is possible to find out new knowledge of expertise, plan systematic and act safety together with expertise and the elderly clients in HiTech- environment. The future experts in welfare change in heart of the elderly during the CaringTV programmes. In future they can go and work in the elderly services. To be familiar with the technology during the schooling, gives possibilities to develop new kind of gerontechnology in health and social services and use them. (see Immonen-Orpana in this publication). To the teachers of university of applied sciences new technology gives possibilities to

be with clients in teaching situation and develop more student-driven teaching methods. Teachers are ready to learn and use new kind of methods in their teaching. (see Raji in this publication).

Although the research found the technology to be somewhat more incomplete than was originally assumed so the research pilot demonstrated that, during the period in question, there were no finished products available on the market that could be used, even with modifications. As a result, the research project developed the suitable technological devices in cooperation with the clients. In producing the product the cooperative partnership played a crucial role, without which CaringTV would not have been realised. The project partners also included partners not actually participating in the research, such as third sector organisations and companies. Partnership was emphasised in the working hours used for the production, direction and evaluation of programme production content (36.4% of the total working hours). Research and development accounted for 40.6%, cooperation (e.g. conferences and similar functions) 11.6% and project administration 17.4% of the time used.

Where companies were concerned, Lääkärikeskus-Yhtymä felt that the expansion of its service platform was necessary to acquire additional data. Additional refinement and experiences would have required a continuation of the project or the development of a follow-up project, as remote monitoring was not available until the final phase. FysioSporttis believes that the development and/or minimisation of technical problems are a major goal for the future. The University of Jyväskylä emphasises that the work of family care givers should be given further attention with regard to demanding carer tasks, so that it would be possible to establish criteria for workloads, their pacing, and the timing and content of required rehabilitation.

Research triangulation demonstrated that partnership worked at the innovative strategic level, where different actors shared and produced together. Students, educators, project workers from the City of Espoo EEVA project, private companies and researchers all actively participated in the production of programmes. Cooperation was emphasised by all partners in their own evaluations. The City of Espoo found that partnership facilitated the development of a technology-based service structure for the elderly. The CaringTV concept also had a regionally-based structure, which required the cooperation of several different actors, also within the City of Espoo. Indeed, technology was also developed for application in child and family welfare functions in Espoo. The research project's CaringTV concept develops services for the elderly on a regional basis. Research produced new data on the aging of elderly service providers and the op-

portunities they have to participate in the creation and development of high-tech products. The jointly-developed service concept turned out to be feasible where clients, providers and decision-makers are concerned. The service concept is part of the technology-based expertise of future experts.

CaringTV was not fully realised as a finished product during the current project. In the spring of 2007 planning for a follow-up project was initiated to continue and build upon the excellent start in cooperation and partnership. In the eventual follow-up project the focus group will change, but the idea will be that existing family care givers can, if desired, continue their participation, where they could play a significant role as a sort of "senior adviser" for the new focus group.

The outlook for CaringTV was surveyed at a seminar held in June of 2007. CaringTV could be adapted to provide coping support for elderly living at home alone as well as sufferers of senility and depression. There are also possibilities for the use of CaringTV in family and social welfare applications. In the future there will be a need to examine the possibilities for combining various support services and CaringTV as well as the development of electronic transactions and multimedia services as a whole.

The research has produced data on family care givers, receiver technologies, programme production and the importance of participative programmes for users. Invaluable data on how to provide instruction to elderly device users and how to construct and develop client-specific programmes together with other actors was obtained in the research. Research showed that family care givers incorporated the new technology in their lives in different ways. Research also showed that various client relationships can facilitate the future development of technological innovations in conjunction with them and the targeting of products to those who need them.

Evaluation of the CaringTV showed that its Service platform (Palvelutori) health assessment services are functional and easy to use by both the elderly and physicians and physiotherapy professionals. The elderly's interest in the final research project seminar is an indication of their interest in new technologies.

According to the results obtained, CaringTV ensures a high quality of life at home and brings the services into the home of the user, thus promoting at-home living for the elderly and postponing the need for housing in a service facility. The GOING HOME project utilises CaringTV and expands the Coping at Home project client base to include elderly people returning home from the hospital.

At the international level, research data has been used in the development of services for the elderly in cooperation with Tohoku Fukushi University in Sendai,

Japan. The plan for the future is to bring together the utilisation of Japanese and Finnish welfare technologies. Internationally the CaringTV concept is an interesting high-tech innovation. Europe commission is preparing information about seniors social participating. This the Finnwell programme run by Tekes (the Finnish Funding Agency for Technology and Innovation) funding Coping at Home – project has produced the CaringTV concept, which has been the good for example how to improve the social participation of the elderly. According to EU-office information (<http://www.helsinki.fi/euoffice/suomi/tiedotteet/caringtv.htm>, read 11.2.08) the purpose of research and development of CaringTV is to find out experimental knowledge of the elderly and other actors and evidence based knowledge how to utilizes new technology in welfare services.

The FinnSight 2015 report also sees two-way television technology as making it possible for the elderly to continue living at home through the audiovisual contact offered by interactive digital TV. The opportunity for social interaction between family and friends as well as nursing staff is seen as providing a sense of security for living at home alone. In such cases the monitoring of medication and the person's cognitive condition, among others, can be done via a remote connection. This type of service also faces professional and ethical challenges, such as issues related to surveillance and human interaction (FinnSight 2015).

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Caring for the elderly is a global challenge. Finland is among countries where the number of elderly people has grown fastest in the world.

The purpose of this research was to produce a client-driven service concept that promotes living at home among elderly family care givers. The project produced new indicators for functional ability, innovative service products and new operating models. The research sees elderly people as empowered members of society who look after their own lives, make their own decisions, and use welfare services when necessary.

The Caring at Home project required good network process management for reconciling the diverse expectations of family care givers, customers, the City of Espoo, participating companies, higher education partners and the Finnwell programme run by Tekes (the Finnish Funding Agency for Technology and Innovation).

The CaringTV® innovation created in the research project is a response to the need for developing elderly services and welfare. According to users, businesses, the City of Espoo and international bodies, CaringTV® is an important innovation that makes it possible to increase the quality of elderly services in the future, while keeping funding needs at a realistic level. The CaringTV® concept could not have been realised without reliable, responsible and development-oriented family care giver families, municipalities, private companies and the students and educators of Laurea University of Applied Sciences. Research around CaringTV® continues.

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